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Effects of Poverty on the Brains of Children and Effective Teaching Strategies to Meet Their Specific Needs

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by

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Chapter One: Introduction

Statement of the Problem

It's a typical end to third period in the middle school; the bell rings at exactly 11:09 a.m., and the 24 sixth graders in my developmental reading class sloppily shove their chairs under their desks, fumble their binders, accordion folders, independent reading books, and writing utensils in their arms and hurry out the door to lunch. I bid them all farewell as I stand at the door and sing my favorite line from *The Sound of Music* (Wise, 1965), "So long, farewell, auf widersehen, goodbye," as I receive puzzled looks from most.

In preparation of my own 35 minute lunch time, I make my way across the hall to wash my hands in the girls' bathroom and by now, the halls are clear. I notice one student left behind, rummaging through his locker, desperately in search of something. This particular student can be withdrawn from class, needs "wake-up calls" to get on task, will ask for water breaks, and frequently hands in incomplete work. Despite these behaviors, his sweet demeanor makes it easy to get along with him and work with his peers in groups. I occasionally joke with this student and tell him he needs to eat his Wheaties in the morning to put a little "pep in his step." Of course, just as this age group has barely heard of *The Sound of Music*, they have also barely heard of Wheaties. I approach him at his locker with the same jest and offer my help, reminding him of the time, as lunch detentions are given to students without a pass. He was distressed and informed me that he couldn't find his money for lunch.

The lunch policy in the middle school allows students to owe a certain dollar amount and receive lunch from the school menu before they reach a maximum debt, and then must take a plain cheese sandwich and cup of water. I tried calming this student down and said that it wouldn't be a problem, he could get a regular lunch and bring what he owed the following day.

He looked up at me, again in distress, and said that he was already at the maximum debt and would be given a cheese sandwich. It wasn't until after this encounter took place that I realized the potential stressors that he was facing over the cheese sandwich; having your friends at the table know you not only couldn't pay for today's lunch, but also couldn't pay for previous ones; watching everyone else eat a lunch that had a milk, juice, fruit, meat, and grain; knowing he wouldn't have a full belly or enough fuel to concentrate through the remainder of the day.

I willingly offered my own money, which I rarely have to do for students, to ease his worry and asked him how much he would need for lunch, as I pulled out some dollar bills from my pocket. "Twenty-five cents," he said was what he needed. I quickly realized this students' anxiety as I had my own "a-ha!" moment; he was a student on a reduced-lunch program. I handed him the quarter that he needed as he profusely repeated that he would pay me back. I acknowledged this with a nod while writing a late pass, wished him a good lunch, and avoided the automatic phrase, "it's no big deal, don't worry about it." It *was* a big deal, and this student was very worried. This quarter was going to make or break his day, possibly providing him the only meal he was going to have. My seemingly innocent comments of "eating his Wheaties," or joining the proverbial breakfast club during class seemed overtly insensitive to me now. In my mind, this brief moment in the hallway could now be completely connected to the behaviors he demonstrated in class on a regular basis, his lack of response to my teaching, and has since reshaped my encounters with him.

Significance of the Problem

As a fifth-year teacher in a suburban, public middle-school on the west-side of a mid-size city in western New York, I have held several instructional positions and am continually faced with the task of addressing the various learning needs of a multitude of students in the area of literacy, while providing the proper instruction needed to help students grow and progress academically. The pressure to close learning gaps, meet standards, implement best practices, and prepare students for standardized assessments increases with each year, particularly with the implementation of the Common Core Learning Standards (CCLS), and Annual Professional Performance Review (APPR) for educators in 2012. While education itself is experiencing major shifts in reform and policy, our district has been experiencing changes as well. Overall enrollment of students in the district has seen a steady decrease since the 2005-2006 school year. However, poverty continues to steadily increase, based on the numbers of students receiving free or reduced lunch (New York State Education Department, 2014).

One problem around poverty in our school is that, "like most teachers from middle and upper classes, many of our students' lives differ from our own" (Jones, 2004, p. 426). Few teachers in the building grew up experiencing what almost 50% of our school's population is now dealing with (New York State Education Department, 2014) "This isn't how the district *used* to be" (personal communication, 2014), can be heard muttered through staff meetings or in the teachers' lounge when discussion of children and the shifts in the district arise. There is a frustration among the teachers with the amount of students coming to the middle school who are reading below grade-level, or are not proficient in basic math skills; all things that can have an effect on teachers' evaluations. Because teachers from middle to upper class upbringings vary so differently from students living in poverty, Jones (2004) suggests "educational practices may be

too closely aligned with white middle-class practices, therefore exposing students of poverty to language, expectations, practices, and identities that are distinctly different from theirs and their families" (p. 463).

Along with the idea of being unable to share particular experiences with students, teachers in my school believe that parent involvement and socioeconomic status (SES) of families has a direct effect on the literacy initiatives of our school. This is according to a survey I conducted in August 2013 for a case study around the literacy practices of the school. The data for this survey were collected using SurveyMonkey Audience (appendix A). When asked what they believed to be the biggest challenge facing the school's literacy initiatives, 64% of the 32 teacher respondents cited lack of parent involvement, while 23% cited socio-economic status of families. One teacher respondent commented that these two factors go hand-in-hand. Based on the opinions of these respondents, poverty is linked to having a negative effect on literacy (therefore academic) achievement in our school.

However daunting a task it is to increase educational rigor and close wider learning gaps, the central issue with students living in poverty lies in what the survey responses alluded to; research shows that "poverty has a direct and immediate impact on a student's basic ability to focus, comprehend, and retain information" (Marquis-Hobbs, 2014, p. 34). Children growing up in poverty typically experience a complex range of risk factors not typically experienced by children from "well-off" families. According to Jensen (2009), the four primary risk factors affecting families in poverty are "emotional and social challenges, acute and chronic stressors, cognitive lags, and health and safety issues" (p. 7). These risk factors expose children to higher stress levels, overall affecting their executive functioning, working memory, IQ, relationship building skills, and immune systems (Aber, Bennett, Conley, & Li, 1997; Blair, Cox, Fortunato,

Granger, Greenberg, Kivlighan, Mills-Koonce, Willoughby, 2011; Burger, 2010; Jensen, 2009; Marquis-Hobbs, 2014; Mohan & Shields, 2014). According to Jenson (2009), it was estimated that 35% of poor families experienced six or more of these types of risk factors, including divorce, sickness, eviction, etc., and only 2% of poor families experienced none. To contrast this, only 5% of well-off families experienced six or more of these risk factors, while 19% experienced none. The more risk factors experienced, the more likely children are to experience learning and behavior problems in school, as opposed to children who experience fewer or no risk factors (Jensen, 2009; Marquis-Hobbs, 2014).

This spread of poverty among children is not something occurring just in our school, but throughout our county as well. The recession in 2008 sparked an increase not just within the city, but into the surrounding suburbs as well. Out of the county's 18 districts, 17 of them have seen an increase in the numbers of free and reduced lunch since the recession. Though the percentage of students living in poverty is typically highest in the inner city, the highest percentage *change* in poverty since 2006 has been seen in many inner-ring (directly outside of the city) districts (Murphy, 2014).

This local trend is indicative of one happening throughout the nation. One in every five public schools was classified as a high-poverty school in 2011 by the U.S. Department of Education – a nearly 60% increase in the previous 10 years (Marquis-Hobbs, 2014). In 2013, according to the U.S. Census Bureau, 45.3 million people were living in poverty in the United States, a number statistically stagnant for the three years preceding it (DeNavas-Walt & Proctor, 2014). The National Center for Children in Poverty (NCCP), estimates that approximately 16 million children (about 22% of all children in the nation) were living in families where the income is below the national poverty level, which equates to approximately $23,550 a year for a

family of four (Jiang, Ekono, & Skinner, 2015b). Further research shows that on average, families need an income of about twice that much just to cover basic expenses, leading to a total of 45% of all children living in a low-income or poverty household (Jiang et al., 2015b).

Despite a slight decrease in the number of children living in poverty for the first time in nearly 10 years (14.7 million children in 2013, down from 16.1 million in 2012), this trend of children experiencing poverty is putting a large number of our youth's educational and literacy success and achievement at risk (Aber et al., 1997; Jensen, 2009; Jiang et al., 2015b; Marquis-Hobbs, 2014; Overturf, 2014).

The following statistics show how low-literacy in the United States negatively impacts society's incarceration rates, health, economy, and workforce ("Adult literacy facts," 2014). Low literacy can be linked to the incarceration rates, as 75% of state prison inmates and 59% of federal prison inmates did not complete high school, or can be classified as low literate. According to Proliteracy.org (2014), low literacy adds an estimated $230 billion to the country's annual health care costs, and costs the United States more than $225 billion each year in non-productivity in the workforce and loss of tax revenue due to unemployment. Individuals at the lowest level of literacy have a higher rate of unemployment than the national average – 14.5% in 2011. Child and teen pregnancy is also strongly linked to low literacy, as uneducated girls are four times more likely to have a child before their 19th birthday, as opposed to girls with a secondary education ("11 facts about literacy in America," n.d., "Adult literacy facts," 2014, p. 11). Among adults over 16 in the United States with the lowest literacy rates, 43% live in poverty, while 75% of Americans receiving food stamps perform at the lowest two levels of literacy ("11 facts about literacy in America," n.d., "Adult literacy facts," 2014).

If poverty contributes to low-literacy which negatively impacts the success of adults in our society, understanding how to reach the learning needs of children in poverty is essential in order to increase their academic success and achievement, therefore changing these statistics, and breaking the generational cycle of poverty (Jensen, 2009; Marquis-Hobbs, 2014).

Purpose of the Study

The main purpose of this study is to investigate the effects poverty has on brain development and learning in children, which limits students' academic success and achievement. Through this study, I will focus on existing, recent research about poverty and data collected about my school to further develop my own understanding of students living in poverty, in an effort to adjust and focus my future instruction to meet the specific needs of these students.

Because poverty has a direct link to student learning (Jensen, 2009; Marquis-Hobbs, 2014) and due to the growing number of children living in poverty in my school (New York State Education Department, 2014), it is my purpose to also provide recommendations and suggestions, in the form of effective strategies, to inform the instruction of my colleagues. Through this research, I intend to answer the following question:

What are the effects of poverty on children's brains, and what are effective teaching/learning strategies that work with children living in poverty?

Study Approach

To study the effects poverty has on the brain of children and effective strategies for these needs, I will collect data through an extensive literature review on existing, current research. In order to discover effective teaching strategies, particularly in literacy, for the specific needs of

children in poverty, I will be investigating many aspects of it. I will decipher what defines poverty, how poverty is measured, and existing policy in the United States. I will research how children are affected physically by poverty including stress, social and emotional effects, health and safety issues, and cognitive brain effects. I will also be researching common misconceptions about poverty, possibly uncovering any gaps in existing research.

To further connect my research to my own teaching and experiences, I will be providing a profile of the middle school in which I work, and how the school is being affected by poverty. I will do this by analyzing data provided by New York State and my school's administration to further connect the effect poverty has on our students.

Rationale

I have chosen to examine poverty in detail because of the increasing discussion and concern that has arisen in my district. The growing numbers of children living in poverty in our school continues to increase each year while overall enrollment decreases. In the last two years our school has taken many initiatives to further educate the staff in students' experiences living in poverty, and how we can be more attentive to their needs. Our school has initiated a cadre around poverty that meets to study research and relay the information to staff through staff meetings. Our counselors are pioneering teacher in-service classes around the study of poverty and its effects on student learning. Despite these initiatives, not all teachers are on board or feel like they are getting enough of the information that pertains to them as teachers. I am finding a need for more information to inform my own instruction and relationship building with these students as well.

The changing demographics and population of our school is calling for a shift in our teaching, the strategies we implement, and the way we form relationships with our students. This is needed in order to close the learning gaps and promote academic success and achievement for all students, in the hope to prepare them for higher education and careers.

Summary

My experiences as a teacher of literacy in a school with an increasing poverty population has encouraged me to look closely at how these particular students' academic success and achievement is being compromised by their situations; more specifically, the effects of poverty on the brain of a child. Research suggests that children living in poverty are at risk for high stress levels, impacting their executive functioning, working memory, IQ, relationship building, and overall health (Aber et al., 1997; Blair et al., 2011; Burger, 2010; Jensen, 2009; Marquis-Hobbs, 2014; Mohan & Shields, 2014). I am also encouraged to research how their specific needs can be met through effective strategies, ultimately shaping my instruction as a literacy teacher in a high-poverty school. Due to the increasing need for more effective strategies among all academic areas, I hope to also provide valuable findings, recommendations, and teaching strategies that can benefit my colleagues' instruction as well, to promote academic growth and success for each student.

Chapter Two: Literature Review

In order to better understand and implement effective strategies targeted for students living in poverty, it is important to understand the many facets of poverty and how they directly affect the health, learning, and wellbeing of children. The following topics will be discussed in this chapter; how poverty is defined in the United States, policies that have been developed and reformed around poverty, chronic and acute stress brought on by poverty, cognitive brain effects, social and emotional effects, health and safety issues experienced by those in poverty (all leading to the interference with learning and literacy development), and general public misconceptions around poverty. It is important to keep in mind that the research discussed in this chapter will support what Jensen (2009) states: "One problem created by poverty begets another, which in turn contributes to another, leading to a seemingly endless cascade of deleterious consequences" (p.7).

What is Poverty?

Recent statistics show that nearly 45% of all children in the United States are living in a low-income *or* poor household (Jiang et. al, 2015). What constitutes the difference between low-income and poor (poverty)? Poverty generally connotes poor living conditions, lack of basic necessities, and struggle. This is typically attributed to households where incomes fall below the Federal Poverty Threshold (FPT). This way of measuring poverty among families was adopted by the Office of Economic Opportunity in 1965, primarily for policy planning and statistical use (Aber et al., 1997). Poverty thresholds were originally derived using a family's pretax income

with the food-cost-based threshold, and what portion of income families spent on food (Books, 2004; US Census Bureau, n.d.).

"Today, the thresholds are adjusted each year by the U.S. Census Bureau for inflation, but not for changes in society's overall standard of living or consumption patterns" (Books, 2004, p. 54). The FPT is mainly used for statistical purposes, and varies depending upon size of the family and the age of its members (US Census Bureau, n.d.). The same thresholds are used throughout the United States, though Jensen (2009) argues that people classified as poor in San Francisco might not feel as poor if they lived in Clay County, Kentucky, as the cost of living varies considerably by area (Jensen, 2009; US Census Bureau, n.d.).

Poverty is measured with the FPT according to family size and age of family members. Two-parent families of four are considered to be living in poverty if the average income in the house is at or below $23,624. A two-parent family of three with an income of $18,751 or below would indicate poverty. In a single-parent family of two, an income of $16,057 or below would place them in a poverty situation (Jiang et al., 2015). It is estimated that, on average, families need an income equal to about double the FPT in order to meet their most basic needs. Families making below this *doubled* income estimate are considered to be "low income" rather than poor (Books, 2004; Jensen, 2009; Jiang et al., 2015b). "Extremely poor" is classified by families having annual incomes of less than half of the estimated FPT for their family size (Books, 2004, p. 15).

Though poverty is statistically measured by income, Jensen (2009), having grown up in poverty himself, personally defines it as "a chronic and debilitating condition that results from multiple adverse synergistic risk factors and affects the mind, body, and soul" (p. 6). He further

explains that poverty doesn't necessarily mean the same thing for everyone, as he identifies six types of poverty:

- *Situational* -brought on by a sudden crisis or loss and is usually temporary
- *Generational*- having at least two generations within a family born into a poverty situation
- *Absolute* - represented by a scarcity of living necessities, day-to-day survival, and is rarely experienced in the United States
- *Relative* - the income is insufficient in meeting society's average standard of living (SOL)
- *Urban* - usually seen in metro areas and characterized by crowding, violence, and noise
- *Rural* - seen in a non-metro area where the population is less than 50,000 people (p.6)

Poverty also has many visible, objective characteristics within the family itself, and the larger community, exposing children to adverse social and physical environments. Poor nutrition, lack of cultural artifacts in the home, possible lack of adequate heating, indoor plumbing, and shared or crowded housing are characteristics within family poverty. In larger contexts (the neighborhood or city in which it exists), the decay of streets and buildings, higher crime rates, and lower quality support services in the community are usually evident (Biddle, 2014; Jensen, 2009; Mohan & Shields, 2014).

Government Policies

Eradicating poverty in the United States has been a lofty task for government administration for many decades, famously beginning with President Lyndon B. Johnson's State

of the Union address in 1964, where he declared an "unconditional war on poverty" (Abramsky, 2014; Bailey & Tanner, 2014; Jones, 2004; Sparks, 2014; Wexler, 2014). The effectiveness of the many programs to come out of this effort are continually argued over, even five decades later, as reforms and new policies come to light, and millions of Americans are still struggling to get by (Bailey & Tanner, 2014).

Less than two months after President Kennedy's assassination in 1963, newly appointed President, Lyndon B. Johnson, gave his first State of the Union address where he outlined his anti-poverty campaign (Sparks, 2014). Johnson set out to launch a series of initiatives designed to end poverty that focused on the "exploitation and discrimination of the poor" (Jones, 2004, p. 462) living in the United States, what he considered to be the richest nation in the world. Johnson's goal was to "empower families living in poverty in ways that would build their communities as well as their economic stability" (Jones, 2004, p. 462). In Johnson's 1964 State of the Union Address he stated:

> This administration today, here and now, declares unconditional war on poverty in America… It will not be a short or easy struggle, no single weapon or strategy will suffice, but we shall not rest until that war is won… Poverty is a national problem, requiring improved national organization and support… The program I shall propose will emphasize this cooperative approach to help that one-fifth of all American families with incomes too small to even meet their basic needs… Very often a lack of jobs and money is not the cause of poverty, but the symptom. The cause may lie deeper in our failure to give our fellow citizens a fair chance to develop their own capacities, in a lack of education and training, in a lack of medical care and housing, in a lack of decent communities in which to live and bring up their children. (Johnson, 1964)

Johnson's "War on Poverty" brought about the passing of the Economic Opportunity Act (EOA) in 1964. The purpose of this Act was to "eliminate the paradox of poverty… by opening to everyone the opportunity for education and training, the opportunity to work, and the opportunity to live in decency and dignity… to strengthen, supplement, and coordinate efforts in furtherance of that policy" (*Economic Opportunity Act*, 1964). The enactment of this law brought about 20 government programs to assist those living in poverty in the United States.

Rural and urban communities experiencing poverty were targeted by the EOA through several different titles, which provided funding and opportunities in numerous areas. Youth programs were developed with a focus on preparing young men and women ages 16-21 for employment. Urban and rural community action programs provided stimulation and incentives to mobilize their resources to combat poverty. Special programs to target poverty in rural areas helped to raise and maintain the income and living standards of low-income rural families. Employment and investment incentives gave loans and financial assistance to low-income students. Work experience programs worked to expand the opportunities for constructive work experience and other needed training to those unable to support or care for themselves or families (Abramsky, 2014; Books, 2004; *Economic Opportunity Act*, 1964; Sparks, 2014).

Johnson's "War on Poverty" also brought about such legislation in 1965 as *The Food Stamp Act*, which created the first permanent national food assistance program, the *Elementary and Secondary Education Act,* which is the basis of federal education programs such as *Title I anti-poverty grants* and teacher professional development programs, *Medicare/Medicaid*, health programs for the elderly or those living in poverty, the *Housing and Urban Development Act*, which led to the creation of the U.S. Department of Housing and Urban Development (some of the first housing-assistance programs for the poor), and the *Higher Education Act*, which started

the Basic Economic Opportunity Grants, guaranteed student loans, and helped students in poverty become college-ready (Sparks, 2014).

The Elementary and Secondary Education Act (ESEA), signed into law by President Johnson, was created to provide "full educational opportunity" (*Economic Opportunity Act*, 1964, p. 88) to all children in the United States. The ESEA provided grants to districts serving low-income students, grants for text and library books, funding for the creation of special education centers, and special scholarships for low-income college students. This law also provided special federal grants to state agencies for the purpose of improving elementary and secondary education to areas of low-income ("Elementary and secondary education act," n.d.).

One of the primary funding programs for schools in poverty to come out of the ESEA was Title I - Improving the Academic Achievement of the Disadvantaged. Title I set out to "provide financial assistance to local education agencies (LEAs) i.e., a board of education, and schools with high numbers or high percentages of children from low-income families to help ensure that all children meet challenging state academic standards" (US Department of Education, 2014, p. 1).

According to the United States Education Department (2014), several federal grants through Title I are distributed to particular schools based on four formulas that calculate the numbers and percentages of children from low-income families. The formulas are dependent upon census estimates, and the cost of education per state. Basic grants are given to LEAs where the number of children from low-income families is at least 10 *and* exceeds 2% of the total school-age population, while concentration grants are distributed to LEAs where the number of children in low-income families exceeds 6,500 *or* 15% of the school-age population. Targeted grants work in the same manner and are based on the same data; however, the data are weighed

so LEAs with higher numbers or higher percentages of children from low-income families receive more funds. Education Finance Incentive Grants (EFIG) allocate funds to states based on several factors: "a state's effort to provide financial support for education compared to its relative wealth as measured by its per capita income, and the degree to which education expenditures among LEAs within the state are equalized" (US Department of Education, 2014, p. 2).

Title I requires that LEAs distribute funds to the schools with the highest percentages of children from low-income families. Funds must focus solely on children who are failing, or most at risk of failing, to meet academic standards, unless schools are participating in a school wide initiative to target and serve all children. In order to do this, schools must have at least a 40% population of low-income children (US Department of Education, 2005b). These funds are designed to support additional academic and learning opportunities to help low-achieving children become proficient with challenging curriculum, while meeting state standards in academic subjects like reading and math. Special preschool, after-school, and summer programs created to extend and reinforce school-year curriculum are encouraged through the allocation of Title I funding (US Department of Education, 2005b).

Johnson's War on Poverty brought about an early intervention program for children of poverty and was introduced in 1965. Head Start, as it was called, focused on early intervention through expansion of "preschool program[s] in order to reach disadvantaged children early" (as cited in Hinitz, 2014, p. 94). Head Start also was designed to provide "comprehensive health, nutrition, and education services for young children, including early identification of physical and mental health problems and medical, dental, and psychological services" (Hinitz, 2014, p. 94). Head Start has seen success in these areas; when Head Start began, only 1 in 10 three-and-

four-year-olds was enrolled in some form of a formal early education, compared to approximately 40% today (Sparks, 2014). According to Sparks (2014), about one third of students entering the program had never been fully vaccinated against diseases such as "diphtheria, tetanus, pertussis, or polio-common childhood illnesses at the time. In 1967 alone, Head Start programs identified and treated 900,000 dental defects and 2,200 active cases of tuberculosis," (Lifting All Boats section, para. 4) showing success in treatment of medical concerns for these children.

Another major goal of Head Start was to focus on social and emotional competence in young children, "the child's everyday effectiveness in dealing with his/her environment and later responsibilities in school and life" (as cited in Hinitz, 2014, p. 95). Involving parents, communities, and hired professionals, all things necessary for maximum development of children and giving families in poverty a voice, became a priority in Head Start policy as a way to do things "*with* families rather than *to* them" (Hinitz, 2014, p. 95).

Arguments over the success and benefit of Head Start continue to occur, especially as educational policy continues to shift. Eric A. Hanushek (as cited in Sparks, 2014), argues that because these programs focus on such a broad range of issues for young children, the "lackluster" (p.1) educational effects are ignored by policy administrators. He also argues that Head Start has not really improved equity or the outcomes for disadvantaged kids. He believes that "we just re-legislate something that's similar to what we had before, and ignore the fact that what we're doing has not been very helpful" (as cited in Sparks, 2014, p. 1). Research by David J. Deming of Harvard University rebuts that though testing gains have dwindled, children that participated in Head Start programs as preschoolers did see overall better life outcomes after the

age of 18 than siblings who were not in programs; higher high school graduation rates, college attendance, and better health (Bailey & Tanner, 2014; as cited in Sparks, 2014).

Legislation in the recent years since No Child Left Behind (2001) has jeopardized funding allocations for Head Start programs, as they are distributed in block grants to states under the control of governors. This goes against former President Johnson's intention of keeping funding out of the control of governors, dismantling the program by "destroying the federal guarantee that the money will be used as originally intended – to provide an array of services to poor children, including nutritional food, dental and health care, immunizations, and, in some centers, literacy programs for family members" (Books, 2004, p. 126).

The No Child Left Behind Act (NCLB) (2001), perhaps one of the most controversial educational reforms in recent times, was signed into law in 2002 under the George W. Bush administration and amended President Johnson's Elementary and Secondary Education Act (ESEA). The goal of NCLB (2002) is to improve public education across the board, especially for poor children; ending "the soft bigotry of low expectations" (as cited in Books, 2004). In his last policy address as president, George W. Bush stated:

> It's unacceptable to our country that vulnerable children slip through the cracks. And by the way, guess who generally those children are? They happen to be inner-city kids, or children whose parents don't speak English as a first language. They're the easiest children to forget about. (Bush, 2009).

This act increases the role of the federal government in public schools, especially those that receive funding through Title I (Books, 2004). NCLB allows for the federal government to set goals in public education, rather than simply a distributor of funds. Under this law, schools are required to follow a set of provisions, which are backed by sanctions for non-compliance.

The provisions cover many areas of school practice, but place an emphasis on testing, public reporting, teacher competence, and military recruiting (Books, 2004).

NCLB requires schools to test all children in grades 3 through 8 every year in order to show steady progress toward a goal of 100% student proficiency on state assessments. This includes subgroups of students with disabilities, English language learners (ELLs), racial and ethnic minorities and students from low-income families (Books, 2004; *No child left behind act*, 2002). President Bush describes the philosophy of NCLB as "pretty straightforward: Local schools remain under local control. In exchange for federal dollars, however, we expect results" (Bush, 2009).

Increasingly severe consequences take affect for those failing to meet requirements, or make adequate yearly progress (AYP) on state assessments. If a school receiving Title I funding fails to meet its AYP target for two or more consecutive years, the school is designated "in need of improvement." Should schools continue to not show progress on test performance, they must allow transfer options to other public schools for their students, and pay for transportation. Schools continuing to not meet AYP will then be required to pay for private tutoring and other services in reading, language arts, and math. More severely, corrective action like re-staffing or reopening as a charter school will be set in place for schools not meeting AYP for five or more consecutive years (Books, 2004).

States are also required to annually report data to the public, such as student achievement on state assessments, including subgroup breakdowns, and overall performance of school districts (Books, 2004; *No child left behind act*, 2002). Teachers are also required to be "highly qualified", as of the 2005-2006 school year. The United States Department of Education states, "to be deemed highly qualified, teachers must have: 1) a bachelor's degree, 2) full state

certification or licensure, and 3) prove that they know each subject they teach" (US Department of Education, 2005a). Demonstration of competency in subject area varies between elementary and secondary education levels, such as, holding a major in that particular subject area of credits equivalent to a major, passage of a state evaluated certification exam, or a master's degree (US Department of Education, 2005a). A provision that has attracted less attention than assessments is the information schools need to provide to military recruiters. Title I schools are required to report all students' names, addresses, and phone numbers to local military recruiters, unless refused by students and their guardians. Schools failing to provide this information risk losing funds (Books, 2004).

Much legislation, in an attempt to eradicate poverty in the United States and control funding, continues to be of concern and controversy among federal, state, and local governments. Policy around education, in general, continues to change and amend the Elementary and Secondary Education Act set forth by President Lyndon B. Johnson nearly 50 years ago.

Chronic and Acute Stress

Stress can be explained as the function of demands placed on a person, and their body's response or ability to meet those demands ("Childhood stress," n.d.; National Institute of Mental Health, n.d.). Though normally connoted negatively, such as feeling overwhelmed or anxious, not all stress is bad (Jensen, 2009; National Institute of Mental Health, n.d.).

Some stress is healthy for people, as it helps support immune functions and develop resiliency (Jensen, 2009). Stress responses can aid in survival decision making, initiating a fight-or-flight response; "when you face a dangerous situation, your pulse quickens, you breathe faster, your muscles tense, your brain uses more oxygen and increases activity" (National

Institute of Mental Health, n.d., p. 1). Biology supports a human's need for some stress, as stated before, not all stress is bad. However, stressors can threaten cell growth, ultimately affecting a body's ability to maintain homeostasis, "where all vital measures of human function are in their optimal ranges" (Jensen, 2009, p. 23). When a stress response has gone on for too long, it can be detrimental to cognitive brain function, immunity, digestion, excretion, and reproduction, as the chemicals released during these responses can actually work to suppress these body systems (Aber et al., 1997; Blair et al., 2011; Jensen, 2009; National Institute of Mental Health, n.d.; Thompson & Haskins, 2014). Many factors in life can contribute to a person experiencing stress. People living in poverty are particularly exposed to more extreme risk factors that contribute to what is known as *chronic stress*, where high levels of stress are sustained over a long period of time, and *acute stress*, severe stress brought about by a traumatic event or experience such as abuse or violence (Anakwenze & Zuberi, 2013; Blair et al., 2011; "Childhood stress," n.d.; Jensen, 2009; Marquis-Hobbs, 2014; Mohan & Shields, 2014; Sparks, 2014). Such risk factors that bring about this chronic stress in low-income families can range from "living in overcrowded, substandard housing or unsafe neighborhoods; enduring community or domestic violence, separation or divorce, or the loss of family members; and experiencing financial strain, forced mobility, or material deprivation" (as cited in Jensen, 2009, p. 24) . Due to financial strain, low-income families are also more subjected to conflict in the home, bringing about a decrease in parents' marital relationship, therefore, a decrease in general life happiness (Aber et al., 1997).

For children growing up in a low-income family, they too, are subjected to more experiences of chronic and acute stress than peers of more affluence. Jensen (2009) explains that "chronic stress is more common and exerts a more relentless influence on children's day-to-day

lives" (p.22). Stressors for children in poverty are brought about by a myriad of reasons. Uncertainty and unpredictability in living situations, sources of food or clothing, or overall safety present a constant source of anxiety in children from low-income families. Fear of danger, abandonment, and the unreliability of emotional support from adults, some who may be sick, incarcerated, or scarce also contribute to children's' stress. As well as worrying about uncertainty of basic necessities, children also experience self-doubt and shame or embarrassment due to their family's challenges (Blair et al., 2011; Jensen, 2009; Marquis-Hobbs, 2014; Mohan & Shields, 2014; Thompson & Haskins, 2014). Some children may be experiencing a multitude of these stressors at once, resulting in what is known as a "high allostatic load" (Blair et al., 2011, p. 1971; Jensen, 2009, p. p.26). This can be referred to as "carryover stress" (Jensen, 2009, p. 26); instead of the brain returning to a healthy baseline, the brain begins to adapt to negative life experiences as a result of the stressors, and "becomes either hyper- or hypo-responsive" (Jensen, 2009, p. 26).

Thompson and Haskins (2014) argue that stress associated with poverty "gets under the skin" (p.2), meaning that it becomes embedded in a child's physical system; and, much like the brain is shaped by experiences early in life, these same experiences can shape other biological systems as well, such as brain function.

Cognitive Brain Effects

Research has shown that chronic and acute stress, like that brought on by poverty, can limit the brain function of students living in low-income families. Blair et al. (2011) state the establishment of research in the idea that "the physiological response to stress, as indicated by levels of neuroendocrine hormones…, is related to distinct aspects of cognition, including

declarative memory as well as executive functioning" (p. 1970). What this means is that much research supports the connection to stress and brain functioning, particularly in working memory, self-regulation, and organization.

The brain is comprised of trillions upon trillions of neurons that, over time, connect to one another making circuits, or pathways, that allow for understanding language and emotion, among other things (Begley, 1996). Electrical signals are sent from neuron to neuron by fibers called axons and dendrites, and it is these connections in the brain that form the circuits, allowing messages to get from the brain to body parts, controlling movement, language, and emotions. What allows axon and dendrite growth is the stimulation of neurons through interaction with the environment, reading, writing, and doing puzzles, while some are hard-wired by genes (Begley, 1996; Piurek, 2008) "If the neurons are used, they become integrated into the circuitry of the brain by connecting to other neurons: if they are not used, they die" (Begley, 1996, p. 54).

Chronic and acute stress has the ability to damage neurons, therefore weakening signals to the brain and rewiring emotional circuits (Begley, 1996; Jensen, 2009). Stressed neurons carry less oxygen, can handle less blood flow, and extend fewer axons to the surrounding neurons. Because of these weaker signals, multiple areas of the brain are affected, impacting a child's ability to learn and cope with the world around them (Begley, 1996; Blair et al., 2011; "Childhood stress," n.d.; Jensen, 2009).

The prefrontal cortex, part of the brain responsible for executive functions like working memory, attention shifting or flexibility, and inhibitory control, is targeted by stress hormones, and affects how these hormones reorganize things in the brain's frontal lobe (Blair et al., 2011; Jensen, 2009; Piurek, 2008). When children experience stress, corticosterone (cortisol, the stress hormone) is produced. Dendrite growth and reorganization in the prefrontal cortex are affected

by both chronic stress and exposure to the stress hormone. Just as these branches can grow (as mentioned earlier) "they can also retract (or shrink) when exposed to stress" (Piurek, 2008, p. 2). This can impair the way the prefrontal cortex functions, therefore, reducing learning capacity and executive functioning, and can result in significant behavioral changes.

The hippocampus (the brain's indexing structure) and the amygdala (the brain's emotional center) are also areas of that brain that are affected by stress and cortisol levels brought about by poverty (Jensen, 2009; Piurek, 2008). While stress hormones decrease the function and complexity of neurons in the prefrontal cortex and hippocampus, the amygdala's complexity of neurons increases, resulting in greater activity in this area of the brain. This activity may bring about a higher sensitivity to memory modulation, problems regulating emotions, and higher occurrence of fear and negative emotions (Jensen, 2009). Self-regulation of behavior (controlled by the prefrontal cortex) can severely be impacted by a low functioning prefrontal cortex and hippocampus, and a highly active amygdala.

While stress can impact the cognitive function and development of the brain, and ultimately a child's learning, social and emotional instability can also have devastating effects on a child living in poverty's learning.

Social and Emotional Effects

Positive interactions and relationships are key in child development, brain function, school performance, and behavior. Healthy attachments to family members, particularly adults/parents, is indicative of the future relationships children have with teachers and peers (Jensen, 2009). Because poverty places such stress on family members and many factors

contribute to the lack of positive relationship building, children in low-income families are more at risk for social and emotional challenges that can impact their learning.

Jensen (2009) explains that the brains of infants are "hardwired" (p. 15) for only six basic emotions: joy, anger, surprise, disgust, sadness, and fear. In order to grow up emotionally healthy, he says children need a multitude of things to foster these healthy emotions, and create new ones:

- A strong, reliable primary caregiver who provides consistent and unconditional love, guidance and support.
- Safe, predictable, stable environments.
- Ten to 20 hours each week of harmonious, reciprocal interactions.
- Enrichment through personalized, increasingly complex activities (p.15).

Children growing up in poverty are more at risk for lacking these types of interactions which foster emotional health. Jensen (2009) refers to the ten to 20 hours of interactions as "attunement" (p. 15), which helps to develop other healthy emotions that children are not predisposed to, such as gratitude, forgiveness, and empathy. The lack of this attunement process can affect the growth of new brain cells, and the circuits in the brain where emotional and social development are reinforced (Begley, 1996; Jensen, 2009). When adults develop patterns of engaging children in more play, conversing, reciprocating a child's inner feelings, and providing longer hours of human contact, healthy circuits in the brain form, allowing children to learn crucial skills such as calming oneself, and self-regulating behavior (Begley, 1996; Burger, 2010; Jensen, 2009).

Parents in low-income families tend to experience more chronic and acute stress brought on by their situations. This can result in adults feeling more overstressed, overworked,

experience marital problems, leading to their overall unhappiness in life, or suffer from conditions such as depression. These factors can cause parents to become less nurturing and even more punitive and authoritarian with their children, exposing them to long-term, harsh punishments, and insecure emotional attachments. This puts their children at risk for developing the same emotional strain (Aber et al., 1997; Jensen, 2009).

Low-income parents' financial limitations present limitations in their interactions with children. This affects the crucial informal learning that occurs at home before entering school, as their skills are less developed in the early years. The school readiness gap for students in poverty is far greater than more affluent families (Burger, 2010; Jensen, 2009). Resources that provide intellectually stimulating facilities, like toys, books, and adequate daycare, are scarce, as money tends to go to the basic needs for a family (Aber et al., 1997; Marquis-Hobbs, 2014). As children are less prepared for formal schooling, their overall cognitive and language development, intelligence, and academic achievement are at risk (Burger, 2010).

Due to the lack of forming healthy, stable relationships and informal learning at home, children raised in low-income households fail to learn appropriate emotional responses in school, and to everyday situations (Jensen, 2009). These children may get easily frustrated, lack perseverance and tend to give up on tasks. This could lead to social anxiety and dysfunction, and make it hard to form positive relationships with peers, affecting cooperative learning opportunities in the classroom. Cognitive delays brought about by lack of the "attunement" process, which ultimately affects self-regulation of behavior, can bring about incidences of acting-out, impatience and impulsivity, gaps in politeness, and less empathy for others'. This is usually interpreted by teachers as a lack of respect, however, is indicative of students' "narrow range of appropriate emotional responses that we expect" (Jensen, 2009, p. 18).

Health and Safety Issues

An unsettling statistic researched by Books (2004) states that "poor children get sick and die more often than others. One national study found that poor children are 50% more likely than other children to die during childhood" (p. 38). Many physical and environmental factors contribute to this statistic and children living in poverty are at a much higher risk for long-term health issues that could begin during prenatal development. The overall health of the mother, exposure to certain environments, and general health care are indicators of how health, psychological development, and learning occur throughout a child's life (Aber et al., 1997; Books, 2004; Jensen, 2009; Marquis-Hobbs, 2014; Murphy, 2014; Wexler, 2014).

Health complications for *any* child can result from risky behavior or poor prenatal care on a mother's part. Children growing up in poverty, however, are more like to have been born to a mother living in poverty, putting that child at risk for health related problems. Lack of general health care, less resources for quality prenatal care, and risky behavior (drugs or alcohol) are more prominent in mothers living in poverty (Aber et al., 1997; Murphy, 2014). Experiencing work-related stress and exerting more physical energy during their pregnancies are significant factors in determining preterm delivery and low birthweight (Aber et al., 1997). These can result in many adverse effects for a newborn child.

Low birthweight (five and a half pounds or less), one of the major death related causes for infants, can lead to a multitude of health problems that children will face for the rest of their lives. Lingering effects of low birthweight can cause many neurological and psychological deficits, and physical problems in children. A child's development of language comprehension and intellect can be impacted, as well as their visual recognition precision (Aber et al., 1997;

Jensen, 2009). Aber et al. (1997) found that "only 12% of premature babies living in high-risk situations (poverty) functioned at normal cognitive level" (p. 473), indicating that more children born preterm or of low birthweight experience some cognitive delays or difficulties in their lives. Low birthweight is also an indicator for greater classroom behavior problems once they reach school age. Children of low birthweight are also at greater risk for developing iron deficiencies, having reduced stature (height and weight), and overall poorer physical health, with conditions like asthma and other respiratory complications (Aber et al., 1997; Jensen, 2009).

The overall health treatment and care for children living in poverty is less than children from more affluent households. They are less likely to have health insurance, resulting in little or no treatment for sickness and chronic conditions like asthma, ear infections, tooth decay, lead poisoning, injuries, and infections, leading to significant long-term consequences, frequent hospitalizations, even death (Aber et al., 1997; Books, 2004; Jensen, 2009; Marquis-Hobbs, 2014; Wexler, 2014). Children living in poverty are more apt for malnutrition, as resources for basic necessities like healthy and plentiful food are limited. This can cause a domino effect of other health issues that can overall result in slow cell growth, weaker immune systems, and specific infections (Jensen, 2009).

Dental care is less likely to be provided to children living in poverty, and 25% of these children do not see a dentist before they reach kindergarten (Books, 2004). Cavities and tooth decay are more likely, as 80% of all cavities are concentrated among 25% of all children, most of them poor. Children in poverty are also two times more likely to experience tooth decay as a result of untreated cavities and lack of oral hygiene enforcement at home (Books, 2004).

Asthma, a respiratory illness that is growing faster than any other chronic disease in the United States (Books, 2004), affects children living in poverty more so than others, because of

their environment and living conditions. Dust mites, cigarette smoke, mold, other air pollutants like stove exhaust (sometimes used for heat), animal hair, rats, and cockroaches are all potential factors in causing asthma. Twenty-five percent of all asthma cases in inner cities are a result of cockroaches (Books, 2004). "Excrement and debris from decomposing cockroach bodies are… breathed into the bronchial tubes, and recognized by the immune system — in certain people — as a signal to make an allergic reaction… the allergic reaction in the bronchial tubes is asthma" (Partners Healthcare, 2010). As children are at a greater risk for exposure to cockroaches in poor living conditions, they are at a greater risk for developing asthma.

Other environmentally-induced health problems result from living in poverty, such as lead poisoning, "the most serious and most common environmental health hazard for children" (Books, 2004, p. 38). Children suffering from lead poisoning also are known to suffer from serious effects such as learning disabilities, hyperactivity, behavioral disorders like aggression, anxiety, and depression, and mental retardation. In severe cases, lead poisoning can lead to death. Poisoning rates are eight times more likely to occur among low-income children. Typically living in older housing potentially exposes children to lead poisoning, as lead based products like paint and gasoline were commonly used, until being banned by the U.S. Environmental Protection Agency (EPA) in the 1970s (Books, 2004; Jensen, 2009).

As these health risks alone expose children to safety issues, certain community and neighborhood factors jeopardize the health and safety of children living in poverty. Fighting and violence in the home, or neighborhoods in particular, subject children to danger and also risk their chance of developing post-traumatic stress disorder (PTSD), should they witness some sort of extreme domestic or neighborhood violence (Books, 2004). Fighting can be a daily

occurrence, as it is often a "mode of survival or a call for respect in the neighborhood" (Jones, 2004, p. 465), and survival is the top priority.

These chronic conditions, untreated illnesses, environmental and community dangers severely impact a child's learning in school. Pain, discomfort, and cognitive deficits result in a lack of concentration in school, behavioral complications, and higher rates and durations of absences and tardies (Books, 2004; Jensen, 2009).

Effects on Learning and Literacy Development

Children living in poverty are clearly exposed to many adverse factors that affect their mental development, overall health, social and emotional well-being, and also their learning and literacy development.

Learning can be severely impacted by living in poverty. The social and emotional struggles experienced by these children can cause delays in learning, lead to behavioral problems in the classroom, and affect the relationships they build with teachers and peers (Aber et al., 1997; Begley, 1996; Jensen, 2009; Overturf, 2014; Wexler, 2014). Acute and chronic stress experienced by parents interferes with the meaningful childhood interactions at the critical age (6-24 months) where developing emotions that assist in the creation of healthy relationships occurs (Jensen, 2009). Having healthy relationships upon entering school helps to stabilize a child's classroom behavior, learn appropriate emotional responses, and provide the core for social skills. Children in poverty are more likely to not learn these responses, give up on tasks (as they suffer from poor goal orientation and low levels of confidence), and become unable to work cooperatively in groups. This lack of social competence may decrease the opportunities for

exchange of information from peers, overlapping the struggles they experience through independent learning (Aber et al., 1997; Jensen, 2009).

Children in low income households overall receive less cognitive attention stimulation than middle or high income children do. Lack of parent interactions and the "attunement" (Jensen, 2009, p. 15) process affect the language acquisition and comprehension skills of children. Overturf (2013) explains that children who grow up in more affluent homes hear about 1500 more words per hour than children in low-income environments. This creates an approximate 32 million word gap before entering school. Low-income parents (or other caregivers) often speak in shorter, more grammatically simple sentences, and engage in less back-and-forth conversations and questioning. Parents living in poverty are also three times less likely to read to their children regularly, affecting their overall reading readiness prior to entering school (Burger, 2010; Luther, 2012). Children in poverty, then, are less likely to recognize all the letters of the alphabet or be able to write their own names before kindergarten (Jensen, 2009; Luther, 2012).

Living in poverty affects parts of the brain that contribute to cognitive development, again, hindering a child's acquisition and comprehension of language and overall IQ (Barnett, 1998; Begley, 1996; Blair, 2011; Jensen, 2009). The prefrontal cortex is responsible for executive functioning, like working memory, attention shifting or flexibility, behavior control, decision making, and organization of information (Blair et al., 2011; Jensen, 2009). Cortisol, the stress hormone, tends to be higher for children living in poverty, and lowers the functioning of the prefrontal cortex, affecting important processes needed for academic success.

Jensen (2009) discusses several studies conducted on the temporal and frontal areas of the left brain hemisphere (known as the left perisylvian) area. This region of the brain controls

"semantic, syntactic, and phonological aspects of language. It is the foundation for reading, pronunciation, spelling, and writing skills," (p. 32). Interactions between parents and children affect the functioning of the perisylvian area, as this region undergoes a more prolonged course of maturation once a child is born than any other neural regions. "A longer period of development leaves the language system more susceptible to environmental influences," (Jensen, 2009, p. 35).

Public Misconceptions and Generalizations about Poverty

Upon Johnson's declaration of a "War on Poverty," Sargent Shriver, head of the Peace Corps, was given the task of being special assistant to the anti-poverty campaign (Abramsky, 2014). A journalist once told him:

> Before you can do anything about poverty, you'll have to fumigate the closet in which Americans keep their ideas about the poor. You'll have to rid America of all its clichés about the poor, clichés like the one which says that only the lazy and worthless are poor, or that the poor are always with us. (As cited in Abramsky, 2014, p.12)

Public perception of people living in poverty has affected the success of programs and initiatives to assist the poor, and education of poor children. Even in the days of Johnson's efforts to combat poverty, people were skeptical of whether the poor were deserving or capable of receiving help, or using it the right way. In 1964, "more than 4 out of 5 Americans believed anti-poverty campaigns to be unwinnable" (Abramsky, 2014, p. 13). This was due to Americans' beliefs, at the time, that the poor "enjoyed poverty" (p. 13).

In recent years, a shift has happened in public attitudes on poverty and poor people. There is a "willingness to believe the worst about the poor and to fund an incarceration safety net

to deal with the consequences of poverty" (Abramsky, 2014, p. 16). In 2010, discussion in the government to cut access to benefits like food stamps, limiting funds for programs like Head Start, and drug-testing welfare or unemployment applicants illustrates this shift in thinking about poverty (Abramsky, 2014). Instead of assisting, it seems, the idea is to "catch" those abusing a system designed to create opportunity to break cycles of generational poverty, and provide equity among citizens.

What Johnson's campaign to end poverty called for was a push for empathy among a nation that he believed could be capable of reaching out to assist those in need. Abramsky (2014) supports a habit of empathy (through conversations and new experiences) in order to change the mentality of a generation and energize a new War on Poverty.

Despite the reality of the few who may abuse assistance or show neglect towards their children or situation of poverty, what is important to remember about a population that represent a large percent of our society is this:

> All families love their children and do their best – whether it looks that way to others or not- to guide their children toward success… tools, time, and energy with which they do that, however, can be severely limited by persistent basic needs. (Marquis-Hobbs, 2014, p. 36)

Conclusion

As illustrated in this chapter, poverty is a multi-faceted issue that requires understanding of how it affects the population, particularly children. Children's learning, health, and general wellbeing are put in jeopardy when exposed to severe, long-term poverty and the complications that arise with it. Understanding how poverty affects the brain of a child, as researched in this

chapter, can help us better understand how to implement effective strategies to aid in their learning and close gaps between them and their more affluent peers.

Chapter Three: Profile of a Middle School

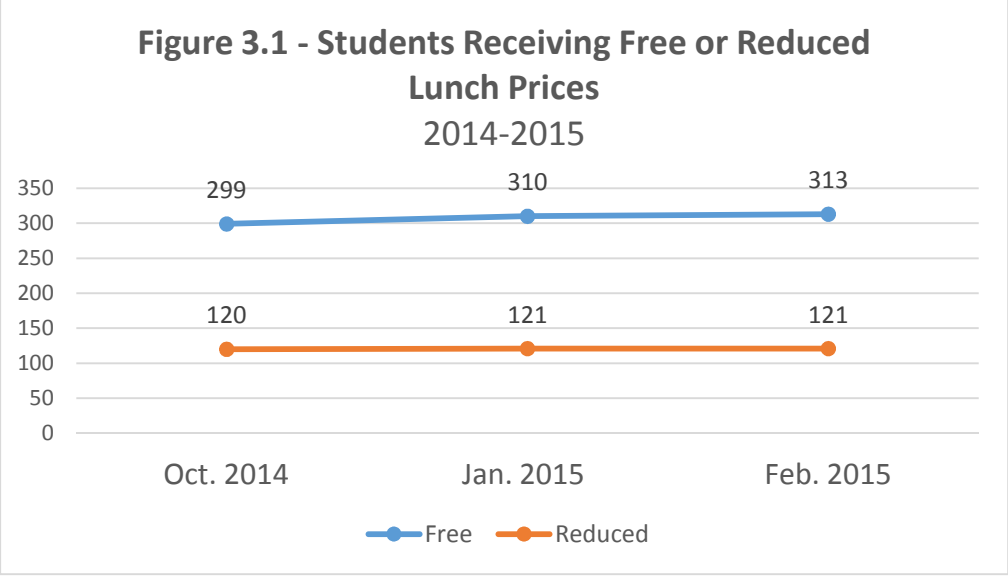
Situated in the inner ring outside of a city in Western New York, is a suburban school district that is one of 17 in the county being affected by poverty. As discussed in chapter one, this district is experiencing shifts in the population of students, as overall enrollment continues to decrease, but the number of low-income or poverty students increases (Murphy, 2014). The effects of poverty on students' behavior and academic achievement is evident, according to the school's New York State (NYS) standardized test performance on the English Language Arts (ELA) and Math Assessments, and behavior referral data from the 2013-2014 school year. This chapter will provide a profile of this middle school, grades 6 through 8, looking at three particular sets of data; the free/reduced lunch and breakfast information provided by the district's school lunch director, NYS assessment results provided through a Comprehensive District Education Plan (CDEP) Report, and behavior referrals from the 2013-2014 school year, provided by district's Coordinator of Data and Assessment.. This data is meant to show the correlation between students living in poverty and academic achievement and behavior complications.

Free and Reduced Lunch

The percent of poverty in schools is measured by how many students receive a free or reduced price lunch. In order to obtain a free or reduced meal plan for children, families must meet Federal income guidelines and apply through the school district or the state. Some

information families must provide include their current gross income (before deductions), SNAP (food stamp) case numbers if applicable, characteristics of their household (number and ages of family members, and foster children), and financial independence of family members (whether certain members earn their own income and is not shared among other family members) ("Free-reduced lunch fact sheet," 2014).

A large percentage of the student population in this middle school is utilizing the free or reduced meals. Since the 2011-2012 school year, total student enrollment has dropped from 1012 students, to the current 947 students of the 2014-2015 school year, while the percentage of students eligible for free or reduced meals remains the same, between 45 and 47% (D. Beauvais, personal communication, March 11, 2015; New York State Education Department, 2014). These data illustrate the increase of children living in poverty; percentages of children in need continue to remain stagnant while overall enrollment goes down, as shown in the figure below.



(D. Beauvais, personal communication, March 6, 2015)

Lunch is not the only meal available for students in this district, as free and reduced prices apply to breakfast as well. The district's school and nutrition webpage states:

> One of the most important ways we can help our children perform better in their classrooms is to provide them with the nutrition necessary for the healthy growth of their minds and bodies. Good nutrition is critical to student achievement. A well-nourished student will generally have better attendance, be more attentive, and have more energy to take on the day's activities. The School Nutrition Program provides tasty, nutritious, and reasonably priced breakfasts and lunches to both students and staff. ("School nutrition & meals," n.d.)

Providing breakfast to all students, in particular the students living in poverty, will contribute to the necessary healthy growth and achievement that the district is striving for. Based on the large percentage of children in low-income or poverty households, looking at the percentage of children utilizing the breakfast plan may give an indication to student performance, and just how great the need to provide meals to students is.

According to the district's school lunch director, in October, 2015, 32.6% of the students receiving free lunch utilized the breakfast program at the middle school, while 21.3% of students receiving reduced prices ate breakfast. These numbers are drastically different from students who pay full price, as 5.6% of this population utilized the breakfast program at school (D. Beauvais, personal communication, March 11, 2015). These numbers might indicate that children who are living in low-income or poverty households may not be given the opportunity to eat breakfast at home, while the students paying full price are more likely eating before coming to school.

New York State ELA and Math Assessment Data

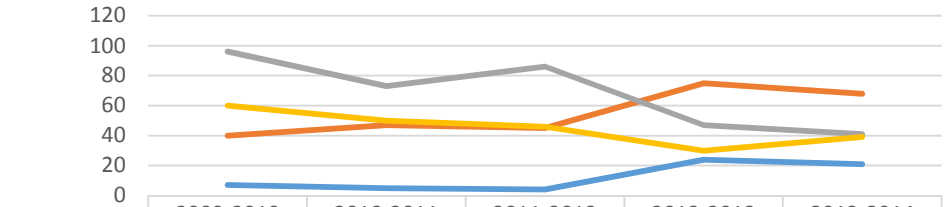
Research provided in chapter two shows that academic achievement is severely affected by living in poverty conditions, as children deal with acute and chronic stress, lack of basic necessities, social and emotional gaps, and health and safety issues (Aber et al., 1997; Begley, 1996; Blair et al., 2011; Jensen, 2009; Overturf, 2014; Wexler, 2014). As the number of children living in poverty in this school increases, overall performance on state assessments decreases, or shows no dramatic growth. Though performance among all students has shown a decrease, some of the major differences in performance are noticed among students who have been identified as low-income or living in poverty. For the purposes of this chapter, academic performance is being measured by the NYS ELA and Math Assessments; a score of 1 or 2 indicating failure to meet standards, and a 3 or 4 indicating passing and meeting standards.

Since the 2009-2010 school year, the amount of low-income or poverty students scoring a 1 or 2 (failing) on the ELA and Math state assessments has increased, while the amount scoring a 3 or 4 (passing) has decreased (B. Best, personal communication, March 6, 2015). This trend is evident in grades 6, 7, and 8 on both the ELA and Math Assessments, and contrasts to students who are not considered low-income. During each school year, the number of students living in poverty, measured by free or reduced lunch numbers, increases while overall enrollment goes down, as discussed earlier (D. Beauvais, personal communication, March 11, 2015; New York State Education Department, 2014) .

The data in the CDEP Report illustrate the large numbers of students from low-income or poverty households receiving a 1 or 2 on the NYS ELA and Math assessments, in contrast to their peers who are not from a low-income or poverty home. With each school year, the data show the increasing percentage of students falling into the low-income *and* failing (level 1 and 2) category. Figures 3.2, 3.3, 3.4, and 3.5 below illustrate this trend on the 6th grade ELA

assessment and math assessments. In the 2009-2010 school year, 43% of the students were non-low-income and passed the NYS ELA with a 3 or 4. However, in the 2013-2014 school year, 37% of students were low-income and failed with a 1 or 2. For both the 6th grade ELA and Math Assessments, the percentages of students in poverty failing is consistently higher than the percentage of students from more affluent homes failing (B. Best, personal communication, March 6, 2015).

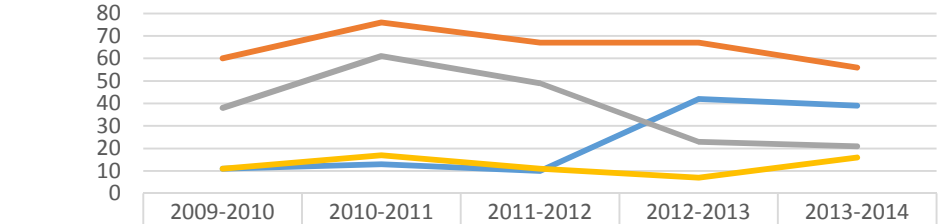
Figure 3.2 - NYS 6th Grade Math Assessment Performance by *Non-Poverty Students*



	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	7	5	4	24	21
Level 2	40	47	45	75	68
Level 3	96	73	86	47	41
Level 4	60	50	46	30	39

(B.Best, personal communication, March 6, 2015)

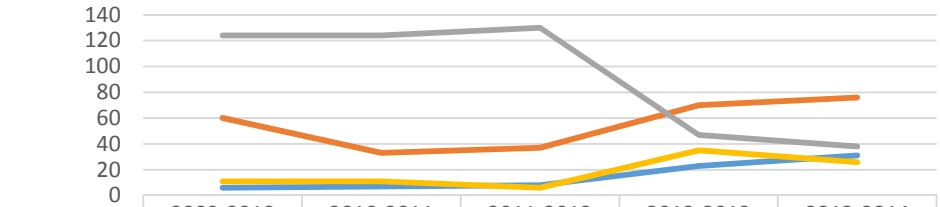
Figure 3.3 - NYS 6th Grade Math Assessment Performance by *Poverty Students*



	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	11	13	10	42	39
Level 2	60	76	67	67	56
Level 3	38	61	49	23	21
Level 4	11	17	11	7	16

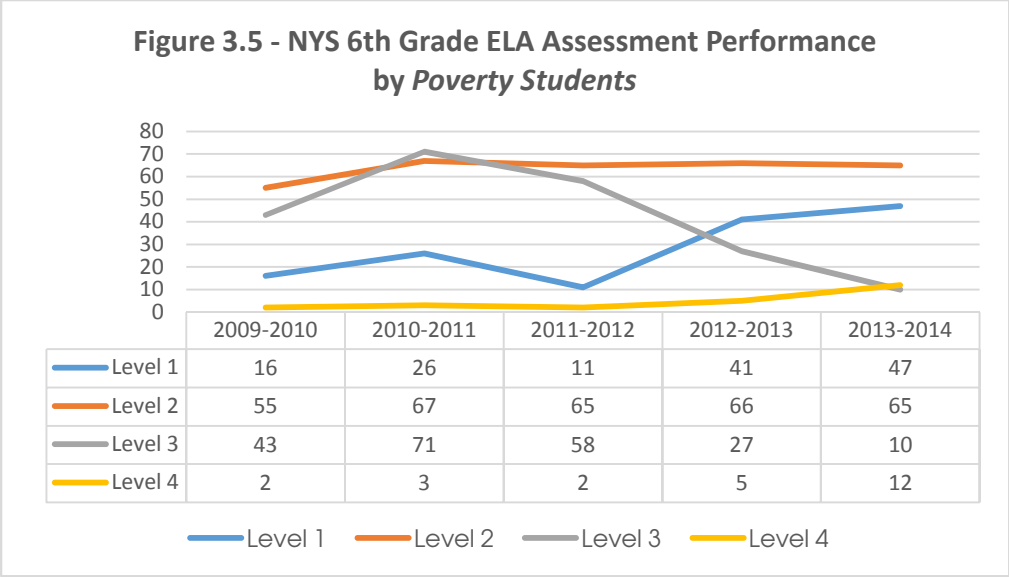
(B.Best, personal communication, March 6, 2015)

Figure 3.4 - NYS 6th Grade ELA Assessment Performance *by Non-Poverty Students*



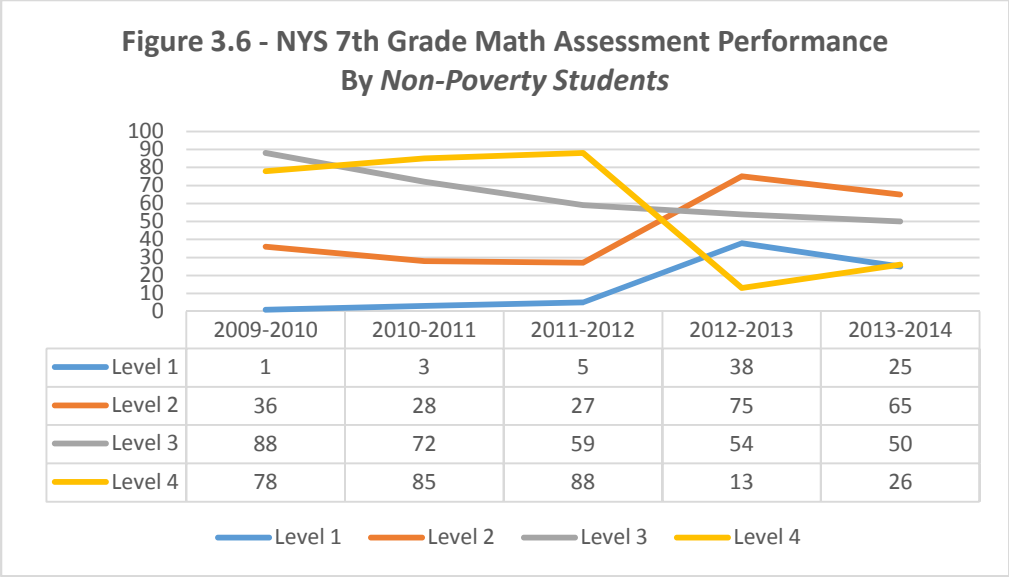
	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	6	7	8	23	31
Level 2	60	33	37	70	76
Level 3	124	124	130	47	38
Level 4	11	11	6	35	26

(B.Best, personal communication, March 6, 2015)



(B.Best, personal communication, March 6, 2015)

This trend is also illustrated in the 7th grade ELA and Math Assessments, as shown below in figures 3.6, 3.7, 3.8, and 3.9. Each year with the exception of 2009-2010, the low-income students had a higher failing percentage than the non-low-income students; the difference in 2009-2010 being 1%. It is also evident that with each year there is a shift of where the majority of students lie; students being non-low-income and passing to the majority becoming low-income and failing. For example, in the 2009-2010 school year, 50% of 7th grade students scored a 3 or 4 to pass the Math Assessment and were identified as non-low-income. Meanwhile 17% of students that year were identified as low-income and failed with a 1 or 2. A shift occurred by the 2013-2014 school year, as 25% were then identified as non-low-income and passed with a 3 or 4, and 36% of students were identified as low-income and failed (B. Best, personal communication, March 6, 2015).



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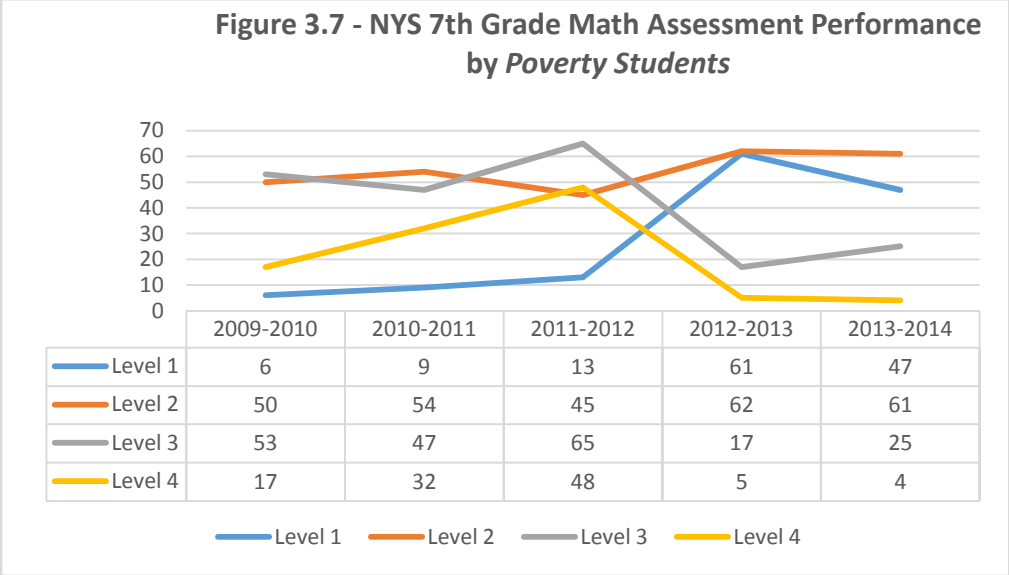
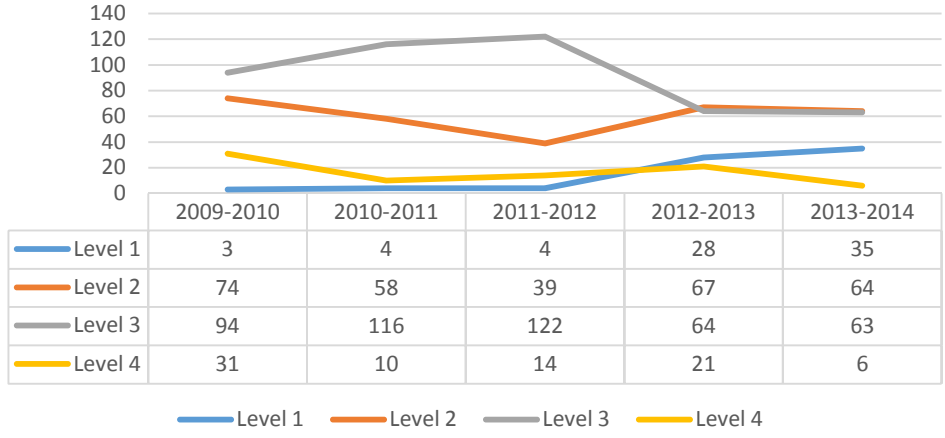


(B.Best, personal communication, March 6, 2015)

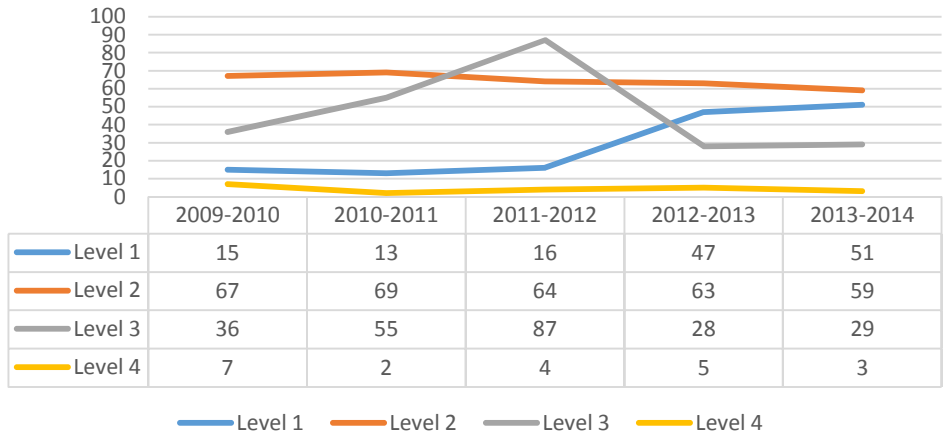
Figure 3.8 - NYS 7th Grade ELA Assessment Performance by *Non-Poverty Students*



	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	3	4	4	28	35
Level 2	74	58	39	67	64
Level 3	94	116	122	64	63
Level 4	31	10	14	21	6

(B.Best, personal communication, March 6, 2015)

Figure 3.9 - NYS 7th Grade ELA Assessment Performance by *Poverty Students*



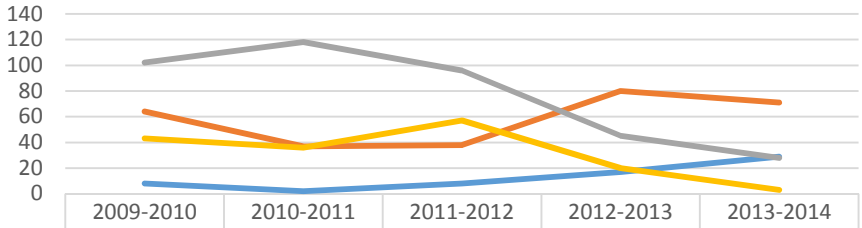
	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	15	13	16	47	51
Level 2	67	69	64	63	59
Level 3	36	55	87	28	29
Level 4	7	2	4	5	3

(B.Best, personal communication, March 6, 2015)

The 8th grade ELA and Math Assessment data also show the same trend; the number of students from low-income or poverty homes that are failing to meet standards is continuing to increase as poverty continues to increase in the district, is indicated in figures 3.10, 3.11, 3.12, and 3.13. The biggest area where this is seen for 8th graders is in the ELA Assessment. During

the 2009-2010 school year, 44% of students were non-low-income and passed with a 3 or 4, while 18% were low-income and failed with a score of 1 or 2. During the 2013-2014 school year, 40% of students were low-income and failed with a 1 or 2, while 12% were considered non-low-income and passed with a 3 or 4 (B. Best, personal communication, March 6, 2015).

Figure 3.10 - NYS 8th Grade Math Assessment Performance by *Non-Poverty Students*

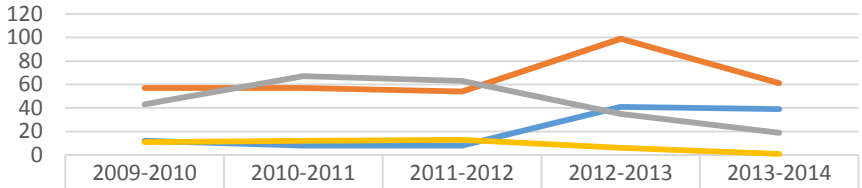


	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	8	2	8	17	29
Level 2	64	37	38	80	71
Level 3	102	118	96	45	28
Level 4	43	36	57	20	3

Level 1 Level 2 Level 3 Level 4

(B.Best, personal communication, March 6, 2015)

Figure 3.11 - NYS 8th Grade Math Assessment Performance by *Poverty Students*

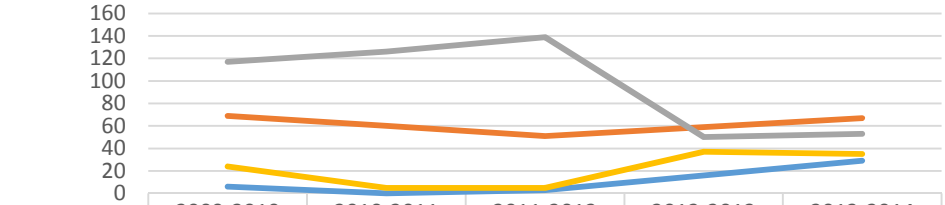


	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	12	8	8	41	39
Level 2	57	57	54	99	61
Level 3	43	67	63	35	19
Level 4	11	12	13	6	1

Level 1 Level 2 Level 3 Level 4

(B.Best, personal communication, March 6, 2015

Figure 3.12 - NYS 8th Grade ELA Assessment Performance by *Non-Poverty Students*

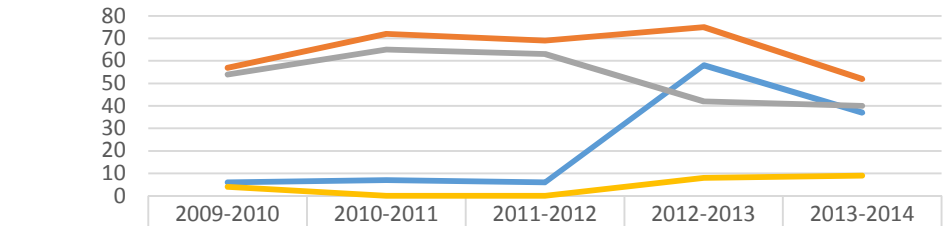


	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	6	0	3	16	29
Level 2	69	60	51	59	67
Level 3	117	126	139	50	53
Level 4	24	5	5	37	35

Level 1 Level 2 Level 3 Level 4

(B.Best, personal communication, March 6, 2015)

Figure 3.13 - NYS 8th Grade ELA Assessment Performance by *Poverty Students*



	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Level 1	6	7	6	58	37
Level 2	57	72	69	75	52
Level 3	54	65	63	42	40
Level 4	4	0	0	8	9

Level 1 Level 2 Level 3 Level 4

(B.Best, personal communication, March 6, 2015)

These changes in student performance over time correlate with the increase of students living in poverty and does demonstrate how poverty can affect academic achievement. However, something that has not been taken into consideration for this study is the impact of the implementation of APPR and Common Core Learning Standards. The data show a dramatic

decrease in performance for *all* students in the 2012-2013 school year, the year APPR was put into action. The decrease in performance for all students could indicate the difficulty in the assessments, the scoring changes as a result of the Common Core Learning Standards, or other biases not examined in this study.

Behavior

Behavior in children can be impacted by their experiences of living in poverty. Research in chapter two suggests that some behavior is a result of cognitive and social-emotional development, which can both be affected by living in poverty. Jensen (2009) explains that the brains of infants are "hardwired" (p. 15) for only six basic emotions: joy, anger, surprise, disgust, sadness, and fear. Other emotions, like respect and compassion, must be taught and experienced through their relationships with others. If these are not being taught or experienced, behavior problems in school are likely to occur.

Chronic and acute stress experienced by those in poverty can also have an effect on the level of the stress hormone, cortisol, which results in underdevelopment of the frontal lobe. This impacts how executive functioning, including decision making and impulse control, develops in children (Begley, 1996; Blair et al., 2011; Jensen, 2009; Piurek, 2008). As poverty places such stress on family members, many factors can contribute to the lack of positive relationship building, placing children in low-income families more at risk for social and emotional challenges that can impact behavior (Begley, 1996; Burger, 2010; Jensen, 2009).

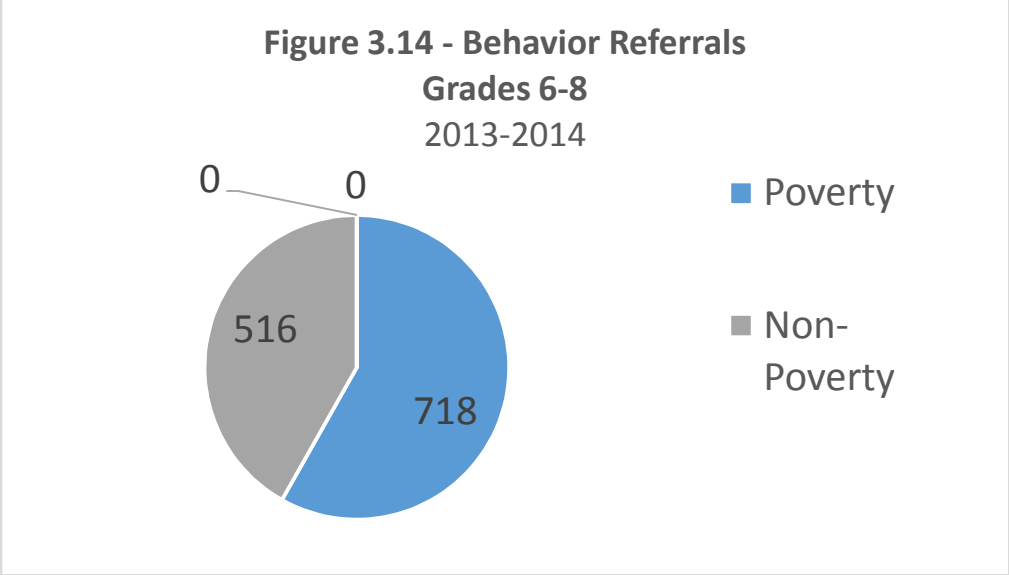
Appropriate behavior and expectations at this middle school are outlined in a Code of Conduct and Character. This document provides the expectations for a safe and functional learning environment. The district's code states:

> The Board of Education ("Board") is committed to providing a safe and orderly school environment where students may receive and District personnel may deliver quality educational services without disruption or interference. Responsible behavior by students, teachers, other District personnel, parents and other visitors is essential to achieving this goal, on school property, school buses, and at all District sponsored events off -campus… These expectations are based on the principles found in "The Spartan Way" — Respect, Responsibility, Compassion, and Hard Work… Learning environments that are safe and supportive can increase student attendance and improve academic achievement. Therefore, in accordance with the Dignity for All Students Act, Education Law, Article 2, the District will strive to create an environment free of discrimination and harassment and will foster civility in the schools to prevent and prohibit conduct which is inconsistent with the District's educational mission. (District Website, 2014)

Students found in violation of the Code of Conduct and Character, are subject to disciplinary penalties by the school, one being a written referral. Referrals are a written documentation of the behavior that is in violation of the Code of Conduct and Character. A location and nature of the offense are documented after a parent is notified. The referral then is sent to an administrator where the students are then called to meet and discuss the referral. Consequences are subject to each individual student, pending the student's prior history, and severity of the incident. A detention, in-school or out-of-school suspension (ISS or OSS), suspension from sports of afterschool activities, or suspension from transportation may be possible penalties carried out (District Website, 2014).

Data compiled by the school district's coordinator for data and assessment show the amount of referrals written during the 2013-2014 school year. During this year a total of 1, 234

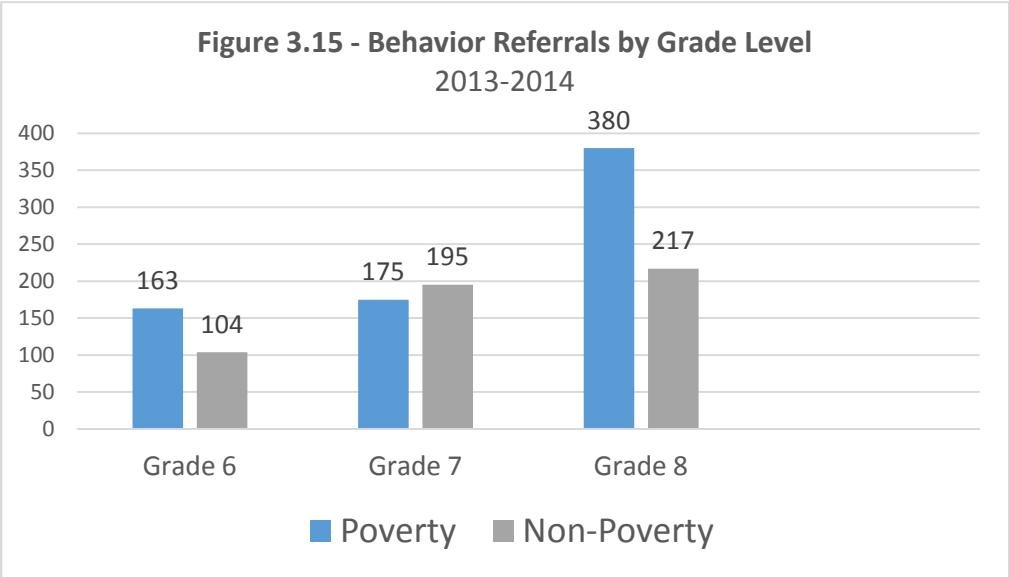
referrals were written by teachers, coaches, paraprofessionals, administrators, and other school personnel who were witness to behavior that violated the Code of Conduct and Character by 6th, 7th, and 8th graders. Out of the total number of referrals, 58% (718) of them were offenses by students in poverty, while 42% (516) were students not living in poverty (B. Best, personal communication, March 6, 2015). Though this data is meant to show the correlation of living in poverty to behavior in school, the data presented is broken down by each individual referral that was written (1,234), but is not representative of 1,234 separate students receiving referrals. Some students received multiple referrals, some for the same offense, in the same location. Some students received up to as many as 15 referrals throughout the school year (B. Best, personal communication, March 6, 2015).



(B.Best, personal communication, March 6, 2015)

Figure 3.15 below, shows the breakdown of referrals by grade level. Eighth graders committed the most offenses warranting referrals, and amounted to 48% (597) of the total referrals. Sixty-four percent of the eighth grade referrals (380) were written for students living in poverty. Seventh graders committed the next highest number of offenses warranting referrals,

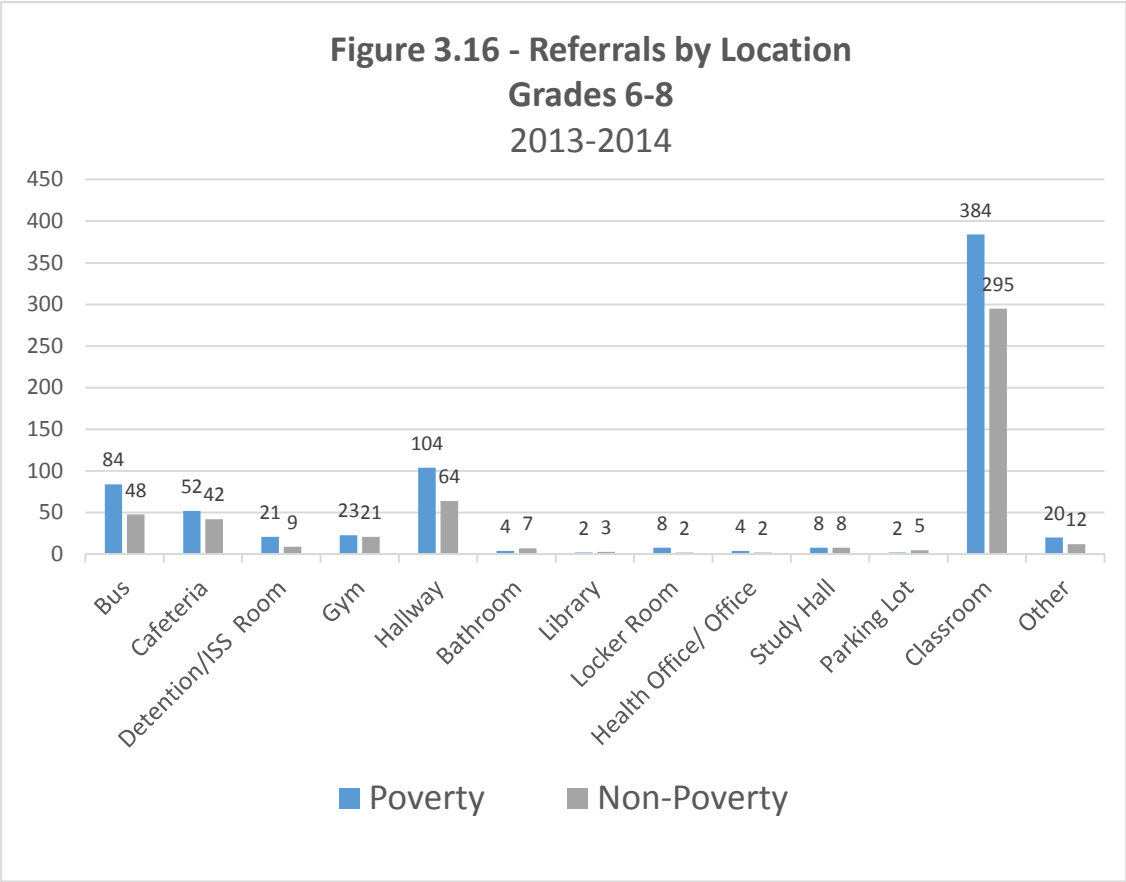
14% (175) by students in poverty, and 16% (195) by students not living in poverty. This grade level is the only one that showed the students not living in poverty receiving more referrals than the population in poverty. Sixth graders totaled 21% (204) of the referrals written; 13% (163) of those by students in poverty, and 8% (104) by the non-poverty students. Overall, these data support the research that suggests behavior is impacted by living experiences of poverty.



(B.Best, personal communication, March 6, 2015)

The location most prone for student referrals (for those living in poverty or not living in poverty) was a teacher's classroom; 55% of the total referrals across all three grades were committed there. Students living in poverty received the most amount of referrals for this location, as 30% of the total referrals were given in the classroom to students of poverty. Such reasons like disrespect, disruptive or inappropriate behavior, inappropriate language, insubordination, and late to class were the highest offenses to be documented in this area. For each of these categories, more referrals were written for students in poverty, as figures 3.16 and 3.17 show. The largest contrast in referrals between students living in poverty and students not living in poverty were seen in the late to class category; 113 for students living in poverty, and

34 for students not living in poverty. The next largest contrast was seen for disruptive behavior; 101 to 68. Disrespect was the third largest contrast, with 68 for students in poverty, and 44 for students not living in poverty.



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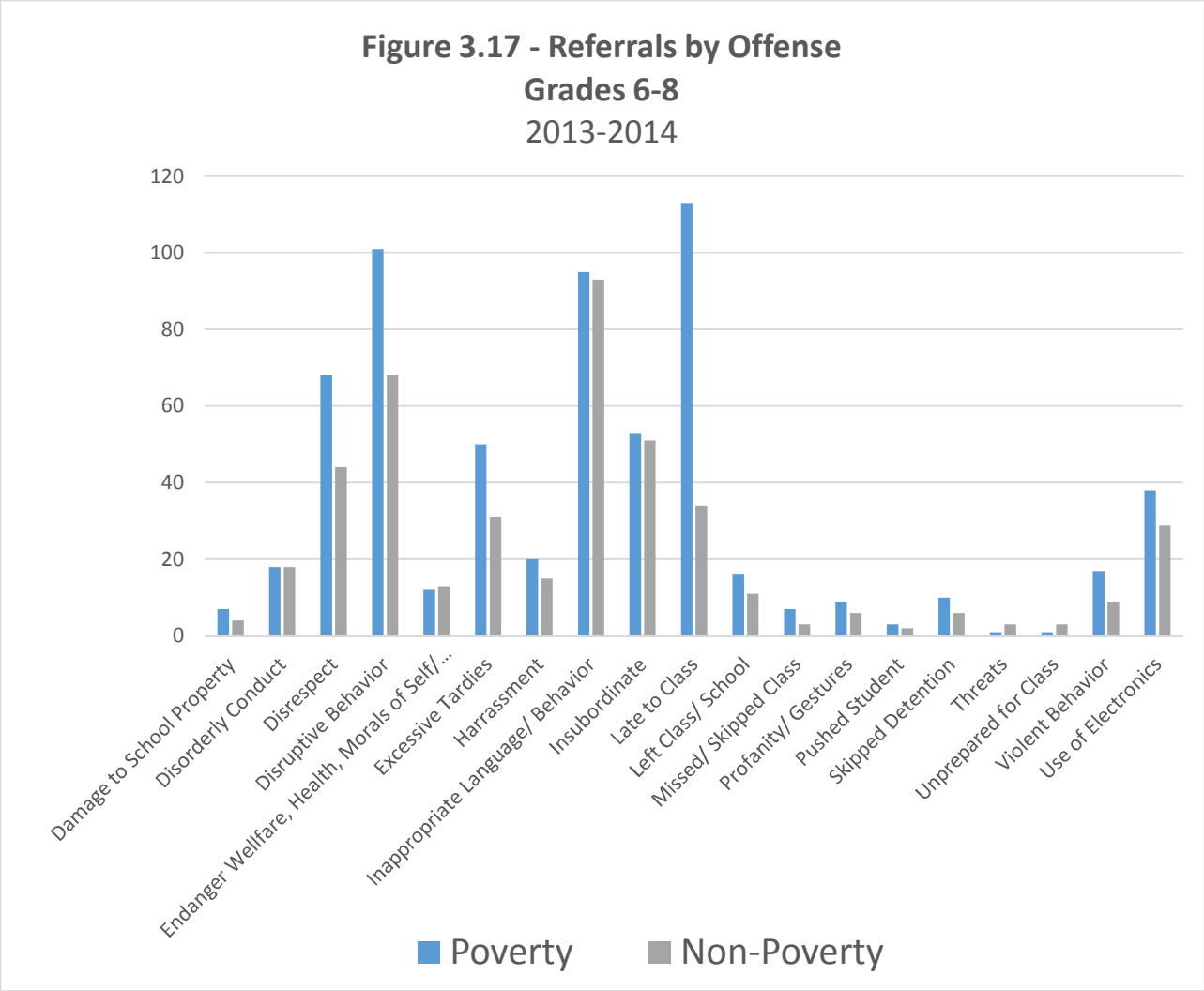


(B.Best, personal communication, March 6, 2015)

These data support Jensen's (2009) statement that behavior is a combination of both genes and environment, and that relationships developed early on have an immense influence on the behavior of children. Students in poverty may have developed a personality that is "insecure and unattached" (Jensen, 2009, p. 14), based on the relationships with parents and caregivers early on. Securely attached children typically behave better in school, even when socialization and social status eventually largely contribute to their behavior. Students raised in poverty are also faced with challenges that the students not living in poverty have to face, and the brain of a

child in poverty has "adapted to suboptimal conditions in ways that undermine good school performance," (p. 14).

Conclusions

Over the last few years, this school has experienced shifts in student enrollment, performance on academic state assessments, and the amount of referrals written for behaviors that violate the Code of Conduct and Character. As the research in chapter two suggests, these changes could be indicative of shifts due to the growth of students in poverty. As also stated prior, these shifts have not been examined alongside the changes in learning standards and style of state assessments.

With academic achievement decreasing and the amount of referrals for behavior increasing, helping students reach their full potential and achieve success must happen through a multitude of ways. Teachers must have a better understanding of the many challenges students in poverty face, and develop more effective teaching strategies that can directly address the specific needs of students living in poverty.

Chapter Four: Effective Learning Strategies and Techniques For Children Affected by Poverty

Introduction

Living in poverty exposes children to adverse situations and conditions that severely impact their learning, academic achievement, and development. For students living in poverty, learning can be a stressful and defeating concept when academic success and achievement seem unattainable. This particular population of students, which makes up approximately 48% of children in public schools, experiences specific risk factors that impact particular areas of learning, as discussed in chapter two (New York State Education Department, 2014). To promote achievement for students in poverty, teachers need effective strategies and techniques that address their specific needs and provide an environment that is conducive to their learning. "Once their learning needs are identified, specialized approaches can help accelerate the learning of these students" (Pogrow, 2009, p. 408).

Research suggests several ways teachers and schools can help students living in poverty; understanding and validating their experiences and funds of knowledge, fostering social and emotional skills, increasing and closing the gap for students' vocabulary and language acquisition, addressing cognitive needs, and increasing students' motivation.

Understanding Students in Poverty

One factor possibly affecting the academic success of children living in poverty is the potential lack of understanding or sharing of experiences their teachers have with them. Jones (2004) suggests that education may be too closely aligned with the experiences of white, middle class practices, and students living in poverty do not respond to teaching and/or teachers who do

not empathize with them. Jensen (2009) states that "teachers don't need to come from their students' cultures to be able to teach them, but empathy and cultural knowledge are essential" (p.11).

Recognizing and building on students' funds of identity, inspired by the idea of funds of knowledge (Esteban-Guitart & Moll, 2014), is essential for teaching, as it allows the teacher to "capitalize on the students' and their families' knowledge and experience as resources for schooling" (Esteban-Guitart & Moll, 2014, p. 43). Funds of identify refers to the manner in which individuals self-define, self-express, and self-understand, according to the "historically accumulated, culturally developed, and socially distributed resources" (Esteban-Guitart & Moll, 2014, p. 31). The "self" is anything that a person might consider to be "theirs"; things, objects, or people who are part of their experiences and is linked to what a person does (Esteban-Guitart & Moll, 2014). These funds of knowledge, which contribute to identity, are the result of peoples' lived experiences, "what people do and what they say about what they do" (Esteban-Guitart & Moll, 2014, p. 36). By allowing students to capitalize on these funds of knowledge, teachers can build upon students' strengths and incorporate their lived experiences into learning.

Esteban-Guitart and Moll (2014) suggest ways in which schools can detect funds of knowledge, such as visiting homes, exploring the surroundings of neighborhoods, and conducting interviews with families. Teachers can also provide an opportunity for students to create a self-portrait, a drawing of what a student makes of him or herself. Teachers may say "I would like you to show me on this piece of paper who are at this moment in your life. If you wish, add the people and things most important to you at this moment in your life" (Esteban-Guitart & Moll, 2014, p. 38). Students may draw community, family, or local geography, which provides signs of how students perceive themselves. Students should then be asked to explain it,

which allows teachers further insight into students' self-perception. This can be used to design specific and significant curriculum (Esteban-Guitart & Moll, 2014).

Deepening staff understanding of the many factors contributing to a student in poverty's academic struggles is key to opening ideas of how to adjust instruction (Jensen, 2009; Jones, 2004). Jensen (2009) suggests forming study groups to explore the risk factors and examine brain-based research of the physiological effects of chronic poverty, as well as "debunking the myths" (p. 11) among staff members who may have come from middle to upper class homes. This will allow teachers to understand not only academic struggles, but also certain behaviors, such as acting out, which influence classroom performance. Jensen (2009) also suggests "changing the school culture from pity to empathy" (p. 11). Pity leads to lowered expectations, as opposed to showing care that can foster perseverance within students. Speaking respectfully to students, and using positive affirmations, both vocally and through classroom displays, can help create this environment of empathy (Jensen, 2009).

"Teacher perception is important" (Rawlinson, 2011, p. 30). Teachers need to be aware of their actions and behaviors towards students to ensure equal treatment that provides the same opportunities and allows academic success for all students. A study conducted with teachers who interacted primarily with children from white, middle-class families found that teachers who deal with this population smile more, lean toward students, make eye contact more frequently, give more time to respond, provide detailed, informative feedback, and ignore, or address less severely, minor behavioral violations (Bamburg, 1994). The same behavior shown to children in poverty can greatly impact their idea of learning and success, as teachers may be some of the only adults they look for to provide encouragement (Rawlinson, 2011).

Allowing students to incorporate their experiences into their work, no matter how different those experiences are from those of their teachers or some of their peers, helps students feel validated and worthy in the classroom and in their learning (Jones, 2004). By teachers reaching out of their comfort zones and listening carefully to children and families, children of poverty will feel more worthy and a part of the classroom environment. They will also be able to connect the learning that happens in the classroom to their own experiences, which can keep a disconnection to school from happening (Jones, 2004).

Teachers can also acknowledge and validate student anger, which they may bring to school when they feel powerless and mistreated, common among students in poverty. They, at times, reach a point where they no longer care about consequences and focus their energy on getting even with the individual whom they feel slighted by (Rawlinson, 2011). This behavior shows up as noncompliance, oppositional, abrasive, opinionated, or defiant, and typically results in students' suspension or expulsion. Typically, students who express opposition in this way want their anger acknowledged and validated (Rawlinson, 2011). Instead of protesting back, as some teachers find themselves doing when presented with an oppositional student, teachers can acknowledge and validate student anger by talking with them outside of class, getting a school counselor involved, and providing conference times with students and parents to discuss matters, suggest appropriate actions when feeling angry, and resolve any issues that may lie between the teacher and student. As with other emotions that need explicit teaching, students in poverty may also need help learning how to express protest without blatantly acting out which results in consequences or getting in trouble. Counselors can help students acquire new responses to avoid getting in trouble, and teachers can help prevent opposition by avoiding negative comments to students, especially in the presence of peers, which may embarrass students (Rawlinson, 2011).

Students will most likely respond positively when they feel they are being treated fairly and with respect.

Building Social and Emotional Skills

Many children living in poverty lack the necessary social and emotional skills to build and keep relationships with peers and teachers that can contribute to their learning. As discussed in chapter two, this is largely attributed to the weak parent-child connection at home, as parents often feel the chronic stress of poverty's effects, such as the lack of resources or the stress of providing basic necessities. Positive relationships can greatly impact children's self-confidence, eagerness and readiness to learn, and their attitude about school and its relevance to their lives (Howard, 2009). Helping students develop positive social and emotional skills is just as important as academics. "Feelings are important. When feelings are ignored, learning suffers" (Rawlinson, 2011).

It is important to understand that these relationships take time and effort to develop and maintain overtime. How students react and respond to situations and behaviors will allow a teacher to see what strategies work, and which behaviors to avoid (Rawlinson, 2011). What teachers can do to help build and establish these positive relationships in school is embody and develop respect, social skills, and inclusion (Jensen, 2009; Rawlinson, 2011).

Showing and giving respect to students, no matter how difficult it may be or when they seem to deserve it the least, is important in building relationships. Because children in poverty have a narrower range of appropriate emotional responses, many of these students "do not have the context, background, or skills to show respect" (Jensen, 2009, p. 18). Avoiding sarcasm and authoritative statements, as well as providing choice and seeking input can help students learn

how to embody respect. Phrasing such as "would you rather" presents the idea to students that their input is valued (Jensen, 2009). Teachers' behavior toward students, whether conscious or unconscious, has a direct impact on student achievement and how they develop relationships with their teachers. Rawlinson (2011) suggests that teachers need to be aware of these behaviors to ensure that all students are being treated equally and being provided the same opportunities for success in the classroom. Teachers' behaviors toward students that communicate unequal treatment or unfairness can contribute to student failure, while leaving them frustrated and feeling hopeless (Rawlinson, 2011). When teachers are genuine in their interactions with students and keep their word, developing a respectful, productive relationship with students in poverty can occur. Rawlinson (2011) states, "students know when you are faking it" (p. 26).

As mentioned earlier, simple body language changes from teachers communicate their genuineness to students. By smiling more, leaning toward students when conversing, and making eye contact more frequently can help connect teacher perception and student achievement (Rawlinson, 2011). Students will be more receptive to this type of positive body language, therefore, fostering their effort and achievement.

Teachers can also make simple changes when responding to students that can help create a productive, positive classroom environment. Teachers should ask stimulating questions, give detailed, informative feedback, praise success more frequently, provide more opportunities for engaging instruction (as discussed further in this chapter), pace instruction quickly, and ignore minor infractions, or address them less severely (Rawlinson, 2011).

Creating environments that foster appropriate, social opportunities with peers can strengthen social and emotional skills. Jensen (2009) suggests some ways to do this in the classroom. Teaching students to face one another, make eye contact, smile, shake hands, and

thank classmates help to establish general socially acceptable meet-and-greet skills that can help students learn social cues and be approachable. This should occur early in the school year upon student introductions and continue throughout. Jensen (2009) also explains how embedding turn-taking is important, even at the secondary level. This can happen through group collaborations and social interactions like learning stations, partner work, and cooperative learning. Team building and cooperative learning like this helps to create a classroom environment of collaboration rather than competition (Rawlinson, 2011).

Cooperative learning can happen in several ways during class. This enables students to take on different roles in multiple relationships with other students. When students are working in groups, assignments can be structured so that each group member has a responsibility that he or she is in charge of. Students can be delegated the roles of leader or facilitator, recorder, speaker, organizer, and time keeper (Jensen, 2009). These roles help students keep each other and themselves accountable for a specific role, as well as making sure the working among the group is being completed. Switching up groups so that students are only in one social grouping for 10-20 minutes at a time is also important for student engagement, avoiding restlessness, and avoiding opportunities to get off-task. The use of study buddies, assigned teams, and whole-class activities keeps grouping flexible and fluid (Jensen, 2009).

Allowing students to feel included and like functioning members of the classroom society can effectively hone social and emotional skills, increase motivation, and cause students to take ownership of their learning and environment. Creating a "familial atmosphere" (Jensen, 2009, p. 22) with language such as "our school" and "our class" helps establish inclusion. Acknowledging effort, skill, and achievement allows students to celebrate their own personal growth as part of a working classroom. Further into this chapter, strategies for praising effort

and skills are provided when discussing feedback and developing the growth mindset. Praising publicly by frequent and genuine affirmations and providing constructive criticism in private instills this appreciation for growth (Jensen, 2009; Rawlinson, 2011). Jensen (2009) suggests acknowledging students who make it to class and thanking students for "small things" (p. 22). This may include a contribution made during a discussion (no matter how small), an assignment that was turned in on time, collaborative work with peers, raising their hand before speaking, a respectful comment they made, or the effort they put in to a task. Praising students for reaching milestones as well as fulfilling end goals also creates a familial atmosphere. These might include the completion of assignments, attaining a desired grade on an assignment or assessment, a movement in a reading level, success in a collaborative effort, or the success of meeting a goal on a BIP (behavior intervention plan).

"Children who live in poverty are human and want the same things other children want – to be treated with respect and given equal opportunities, though they may ask for them differently. What they believe about themselves and their lives determines how they ask" (Rawlinson, 2011, p. xvi).

Language and Vocabulary Acquisition

Poor language and vocabulary acquisition, as research shows in chapter two, is one of the biggest challenges and causes of academic delays for children in poverty. These children are exposed to far less words per day prior to entering kindergarten, as meaningful interactions and access to stimulating toys and books may not be prevalent in their lives (Aber et al., 1997; Begley, 1996; Pogrow, 2009; Wexler, 2014). Because of this delay, children in poverty are more

likely to struggle to develop reading abilities due to their deficiencies in reading readiness skills (Luther, 2012).

Increasing exposure to, and understanding of vocabulary is crucial to academic achievement, as children need a lot of words to understand the world around them (Overturf, 2014). Vocabulary is broken down into three tiers; tier 1, tier 2, and tier 3. Tier 1 words refer to the everyday, already known vocabulary that occur in basic conversation. Tier 2 words are the higher level, "general academic" (Overturf, 2014, p. 23) words that students generally see in multiple contexts. Tier 3 words are the vocabulary terms that students are usually only exposed to in specific content areas, like science, math, and social studies, but are crucial to comprehension of the content (Overturf, 2014).

Students living in poverty should be exposed to a small number of tier 2 and tier 3 words at regular intervals to help them understand how to create networks of meaning between words, and word parts. Overturf (2014) and Pogrow (2009) suggest at the elementary level to introduce and connect word learning to different learning experiences and connect as many words as possible to prior learning. This helps create the network of meaning and develop a sense of understanding. Teachers can do this through their own consistent use of language in the classroom. Discussions around vocabulary in a content area are also key in developing students' understanding of words, while helping them learn particular vocabulary words as well as learn about vocabulary in general. The use of semantic word maps or lists can also help students connect words to content, look at word parts (prefixes, suffixes, Greek or Latin roots), or study the nuances of meaning (Scott, 2015).

In the middle and high school levels, vocabulary instruction should take place across the curriculum to engage students and provide multiple exposures. Overturf (2009) also suggests

creating an environment where students are constantly immersed in vocabulary through read alouds, vocabulary games, metaphorical use, and hearing tier 2 words used in regular context. For example, instead of having a class weather person, the teacher may refer to a student as the class meteorologist. By regularly replacing a common word, the tier 2 word will become ingrained in their own daily use. Demonstrating and sharing one's own enthusiasm toward learning and the use of new words can help students develop their own sense of intrigue for learning as well, making new learning interesting and thought-provoking. Teachers might allow students to display and share newly learned vocabulary in a designated area of the room, like a bulletin board. Once new vocabulary is acquired, the meaningful use of new vocabulary should be celebrated. An incentive for students who are taking risks to use new words in regular writing or conversation may be offered. "Students are excited about words when their teachers love words" (Overturf, 2014, p. 23).

Questioning and modeling through think alouds are two strategies that can encourage students' language acquisition and making sense of new words (Overturf, 2014; Pogrow, 2009). By teacher modeling through think alouds, students are also exposed to new ways of comprehending text, as teachers allow students to see and hear comprehension strategies they use while reading (Fisher, Frey, & Lapp, 2011).

Thinking aloud is an interactive process where teachers, in a conversational manner, "illustrate and scaffold how to build new knowledge and language about a topic, features, and structure of the text in which information is contained" (Fisher et al., 2011, p. 232). Through a think aloud, teachers also can demonstrate how to figure out unknown vocabulary through the use of context clues (accessing word clues, tone, and content of how the word is used), word parts, or a glossary and dictionary. By "making public" (Fisher et al., 2011, p. 232) what a

proficient reader does unconsciously, students will eventually be able to self-monitor their understanding of a text by making use of strategies that have been shared aloud by their teacher.

Another strategy is teaching how to identify, decode, and use the meaning of prefixes, suffixes, and roots to figure out the meanings of multi-syllabic words. This can be done with specific word studies that focus on Greek and Latin roots and recognizing when they occur in everyday text (Overturf, 2014; Pogrow, 2009).

Teaching to Cognitive Needs

As discussed in chapter two, children living in poverty are more at risk of experiencing cognitive learning delays as they are more exposed to factors like stress and poor parental interactions, which ultimately affect the development of neuron pathways and cause increased levels of cortisol, the stress hormone, in the brain (Begley, 1996; Blair et al., 2011; "Childhood stress," n.d.; Jensen, 2009). These factors impact executive functioning skills (problem solving, critical thinking, processing speed, attention, self-control, and working memory), ultimately affecting academic achievement in students (Begley, 1996; Blair et al., 2011; Jensen, 2009, 2013; Piurek, 2008).

"Cognitive Capacity is not fixed, but improvable" (Jensen, 2009, p. 66). Teachers can influence the development of these executive functioning skills, or "core cognitive capacities" (Jensen, 2013, p. 53) through instruction that targets specific thinking skills. Jensen (2013) suggests several engagement strategies teachers can imbed into their curriculum that require approximately 10 minutes a day and can show growth in these skills within 6 to 10 weeks. The strategies he suggests are "building attention skills, teaching problem solving and critical thinking, training working memory, and developing processing speed" (Jensen, 2013, p. 54).

Building attention skills requires focus on the type of learned attention; focusing in a desired direction and sustaining that focus for as long as necessary while suppressing other distractions. This can be difficult for children in poverty as they typically have weaker abilities in sustaining focused attention. Brains are "hardwired" (Jensen, 2013, p. 55) to direct attention toward moving objects and rapid changes around them. Attention can be indicative of a student's academic success. Jensen (2013) suggests increasing student buy-in by creating hooks that pull students in to a task and create genuine interest. Creating a challenge such as "The last class was able to find only five differences. I bet you can do way better than that," (Jensen, 2013, p. 56). Giving small hints or teasers that tap into students' interests may make students more likely to give attention to a specific task.

Teachers should allow students to make predictions as a way to think about upcoming lessons, content, and activities. Teachers can ask students to predict content or the process involved, then allow them to share by prompting, "Raise your hand if you believe that…" (Jensen, 2013, p. 56). Teachers can also offer incentives for predictions by offering things like homework passes to those who predict correctly. This keeps students invested through the learning process, as they are eager to see the outcome. "Prediction forces the brain to care about the outcome because we get vested in being right" (Jensen, 2013, p. 56).

Physical movement strategies can help students increase their attention by increasing levels of norepinephrine (a neurotransmitter that increases focus and attention) in the brain and blood flow (Jensen, 2013). Incorporating movement can easily be incorporated. Jensen (2013) suggests several activities for the secondary level. *Up and down* is a 5 minute activity where students get up to find a partner and use the time allotted to review material just covered, quiz each other on content, or perform a think-pair-share on a given topic or question. *Walk and talk*

is a similar activity, however, a teacher might put on upbeat music in the background to keep students moving, while each partner is allotted a two-minute time limit to express his or her idea, finding, or opinion on a given topic or question. A timer can be set so the partners know when to switch speaking turns. Harvey Silver (2012) suggests engaging students in a debate where students must pick a side of the room to stand on, based on their viewpoint. Students who are unsure of their viewpoint must stand in the middle of the room and listen to students on either side of the room express their opinions of why they should join a particular side. This allows for movement, while providing students the opportunity to argue viewpoints and cite evidence.

Pausing and chunking (dividing tasks, content, or reading into small parts) every few minutes helps to give students time to mentally process and add a sense of anticipation to a lesson, ultimately building attention. Longer pause breaks of 30 to 90 seconds may also help students focus. Chunking content helps students' understanding. Lessons or lectures should be kept short, approximately 12 minutes, at the secondary level and then students should be given time to "process the information through strategies such as summarization, think-pair-share [where students individually develop ideas then share with a partner], or compare and contrast" (Jensen, 2013, p. 56).

Reading and writing strategies can also help to build attention skills. Incorporating "quick writes" (Jensen, 2013, p. 58) into curriculum allows students to attend by writing as quickly as they can, without being able to edit. Quick writes may appeal to lower-achieving students if presented in the way that *what* they write is more important than *how* they write. Giving students the opportunity to focus on the content and not worry about conventions allows them to write freely (Mason, Benedek-Wood, & Valasa, 2009). The purpose of quick writes is to help build focus while giving students an opportunity to "reflect, articulate, and elaborate on

what they have learned" (Mason et al., 2009, p. 304). This process builds a student's ability to stick to a task over time, developing his or her ability to focus. As these quick writes increase, they too will increasingly be able to focus on one task at a time, and improve their ability to "recall, clarify, and question information" they interact with (Mason et al., 2009, p. 304).

Using high-interest reading material can also help build and sustain students' attention by allowing them to feel compelled to pay attention, and hook them into reading. If they are passionate about a subject, incorporating that into a short reading can interest students and also allow them to feel successful. "Students need to read material that they can read, understand, and enjoy if they are to become competent lifelong readers and learners" (Graves & Philippot, 2002, p. 179). Focusing on the readability (the ease of which a text can be read) is also important to allow for students to feel successful, particularly if they are struggling readers. "High-interest, easy reading books can help struggling readers to become accomplished and lifelong readers" (Graves & Philippot, 2002, p. 179). Conducting a student-interest survey is an effective way to identify the topics or genres that students prefer to read. Accessing information through a school's reading teacher, like students' reading levels, will allow for teachers to know the appropriate readability of text to provide for students.

Using novelties like "redirects" (Jensen, 2013, p. 57) can help generate attention by allowing students to shift their focus to something different in the content or to another student when beginning group or partner activities. Redirecting students suddenly can help students quickly shift and redirect their own attention. If students have sustained attention for a long period of time, Jensen (2013) suggests saying "quick, find a partner – you have nine seconds!" or "raise your hand if you'd like to do something we've never done before. Good. Now turn to your neighbor and say, 'I'm ready!'" (Jensen, 2013, p. 57). Students will generally stop what

they're doing and refocus their attention on locating a partner, while also having a short break from the sustained focus they were previously giving an academic task.

Teaching problem solving and critical thinking skills is also a way to develop a student's executive functioning. These skills are necessary as they help students to identify problems in a question, prioritize and create steps to a solution, and evaluate outcomes while looking at problems from multiple perspectives (Jensen, 2013). Children living in poverty usually don't have as many experiences solving these types of problems academically. Jensen (2013) suggests incorporating practice with these skills at least two or three times a week to help students become proficient in these areas.

By modeling and scaffolding, a teacher can introduce a relevant problem, one that has a high student buy-in (as mentioned above), and demonstrate how to come up with possible solutions. First, a teacher would walk the class through the steps of solving the problem and explain how it was done. Then, the process would be displayed for all to see so it could be referenced later during guided and independent practice. Giving students a new problem and providing time to create possible solutions through guided practice allows the teacher to correct errors as students are working. Eventually, students would then be given independent practice to internalize this process (Jensen, 2013).

Collaborative problem solving allows students to practice the above skill with partners or in a team. Teachers can simulate real-world dilemmas or typical academic problems (like a math word problem). Students would need to document steps in solving the problem and ultimately providing an answer. Students can also practice this collaborative problem solving with issues that might happen among friends, within a family, or with future colleagues to connect to real-life problems that children in poverty may be exposed to (Jensen, 2013).

Jensen (2013) provides 10 steps of what a sample problem-solving model might look like that can be simulated in the classroom. Though time consuming, this demonstration of how to problem-solve (which can be applied to academic or social/emotional issues) is necessary for students to internalize in order to become independent problem-solvers. First, maintaining a positive attitude and affirming students' effort through these processes is key to their success and attitude. Second, identify the real problem, while avoiding distracting details. Third, state the goal. Fourth, identify the resources needed to solve a problem like people, time, or tools. Fifth, review boundaries or limitations that may prevent the solving of the problem. This may include time limits or policies. Sixth, identify possible paths to the solution. Seventh, predict risks or possible setbacks for your solutions (each path that is identified). Eighth, decide on one strategy for solving the problem and write it out. Ninth, implement the strategy and change is needed. Finally, celebrate success as a solution has been reached (Jensen, 2013). Allowing this practice of following steps promotes motivation to continue and persevere through future setbacks.

Training working memory is critical to students' academic achievement, as this is truly affected by living in poverty. Working memory refers to an individual's short-term storage and manipulation (like recall) of information (West, Wong, Minero, & Pumaccahua, 2014). Working memory is crucial when it comes to reading comprehension, math, tasks that require focused attention, and problem solving, as students are required to remember instructions while carrying out a task, writing while formulating the next part of a sentence, or performing mental arithmetic (Jensen, 2013; St Clair-Thompson, Stevens, Hunt, & Bolder, 2010). Working memory at age 5 is more of a predictor of academic achievement than a student's IQ at age 10 (Alloway & Alloway, 2010).

Jensen (2013) states that building a working memory takes only 5 to 10 minutes a day for approximately 8 to 12 weeks. He suggests using existing content, as this reinforces learning of content while training working memory. The working memory is typically stored in sounds and images, and students with poor working memory usually attend more focus on one of these modalities at time. In order to build this working memory, both modalities need to be worked in order to create more transfer between modalities (sights and sounds) (Jensen, 2013). "The more complex the working-memory training (the more you combine modalities by mixing visuals with sounds), the more likely it is it that students will be able to simplify and transfer the skill being trained to various other tasks requiring executive functioning" (Jensen, 2013, p. 61).

Practicing recall for five minutes a day with simple commands can improve a student's listening skills and working memory. For example, a game of *Simon Says* uses recall in a simple, physical way. Increasing the complexity over time can keep students engaged. Instead of giving direct commands each time, allow students to recall the commands by saying something like "Simon says follow only the most recent command" (Jensen, 2013, p. 62). This allows students to increase their focus of auditory commands, general recall, while physically attaching visual

Reviewing increasingly large chunks of content can help build attention, listening skills, and working memory. This gradually introduces the amount and complexity of content reviewed while building attention skills and working memory (Jensen, 2013). Students can do this activity in groups and take turns to build on group members' contributions. The group starts by a member naming a key word or fact that relates to the content. At the secondary level, bigger concepts and key ideas, or short review sentences may be what the group starts with. The

student to the right repeats what the first group member said, then adds something new, and so on.

The use of "computerized cognitive interventions" (West et al., 2014, p. 265) can help strengthen weaknesses in working memory. Various programs provide students with exercises that require the maintenance of attention in order to complete them, including the combination of visual and auditory modalities. "Generally, programs of this sort are adaptive. That is, the difficulty of the exercises presented is adjusted based on the response of the user. Thus, if the user completes an exercise correctly the next exercise presented will be more difficult; conversely, if the exercise is completed incorrectly the next exercise will be less difficult" (West et al., 2014, p. 265). Programs, like Lumosity.com that can be accessed in the classroom and can be utilized into the instructional day to provide students with timed exercises.

Developing processing speed is also a way to help build executive functioning skills in students living in poverty. Jensen (2013) explains processing as "the act of working with or modifying something" (p. 65). This includes a myriad of skills such as collecting, sorting, summarizing, calculating, organizing, and analyzing; all skills that must be taught as they are not innate. Students living in poverty are more likely to struggle with these skills, as they are more at risk for auditory processing and language deficits (Noble, Norman, & Farah, 2005). Below are various ways these skills can be imbedded into the classroom.

During math lessons, teachers can use a strategy called "show and shout" (Jensen, 2013, p. 66). This entails having students form circles of 3 to 5 students and standing to face each other. Students, on the teachers cue (ready, SHOW, count, and SHOUT), will put up their hands showing between zero to five fingers. Each student tallies the fingers and shouts out the total.

Whoever is first, wins. Complexity of this game can be modified to different math processes (multiplication, division, subtraction) (Jensen, 2013).

Creating learning lists helps students with language arts processing (Jensen, 2013). Students can work in groups and select a passage or chapter of a book. Together, students will develop a lesson for the text, creating lists of key ideas or characters, questions that can build comprehension, comments about themes or things that hold personal meaning, and things that puzzled or interested students. Students share these lists with other teams, groups, or partners and may present their lessons (Jensen, 2013).

Simply posting models of processes in the classroom can also help with building processing speed. Displaying the writing process, steps for solving math problems, or posting rules and expectations allows students to practice and internalize these processes without feeling singled out. This is especially significant for students living in poverty, as they experience stress and anxiety (Jensen, 2013).

Building executive functioning skills are necessary for students to experience academic success and show growth as they move grade levels. Though students in poverty typically can demonstrate lower abilities in these areas, teachers can impact students' learning by incorporating short, effective, and engaging strategies that can build on the deficits of these skills.

Increasing Student Motivation

Motivation in all students, whether intrinsic and driven by personal goals, or extrinsic and driven by outside reinforcement, plays a significant role in academic achievement. Individual actions driven by motivation are typically based on three components: "goals, emotions, and

personal competency beliefs" (Putman & Walker, 2010, p. 141). Finding what impacts students' abilities to put forth effort, focus, participate, and take an active role in their education is critical for all students, particularly for students living in poverty, as they are more likely to feel a lack of motivation and hyperactivity or disconnectedness due to the acute and chronic stress they experience. An increase in students' motivation can impact five key parts of their learning; effort and energy, mind-set, cognitive capacity, relationships, and stress level (Jensen, 2013; Putman & Walker, 2010).

Jensen (2013) states that some factors impacting effort and motivation are learned, however, others are environmental, for example, "family, friends, work, culture, school, and life circumstances" (p. 73). Teachers need to understand the many factors contributing to a child of poverty's stress level which can impact motivation and behaviors (often misinterpreted as acting out or lethargy). Students' motivational patterns are not fixed, and can change when they're exposed to more productive experiences (Putman & Walker, 2010). When motivation to learn increases, so does the capacity to learn more. Jenson (2013), provides five actions that teachers can do to increase motivation and effort for children living in poverty; make it their idea, manage risk, build the learner's mind-set, provide feedback, and get a trial-size effort.

Children living in poverty tend to experience a low locus of control, the mind-set that the world happens *to* them. A low locus of control causes a person to feel limited control in order to manage any difficult situation, causing stress. Students in poverty may demonstrate behaviors such as anger or helplessness. Jensen (2013) explains that when a student in poverty experiences an elevation in the perception of control, stress levels go down, and learning increases. This can be done for students by providing them with a sense of control through choice making. Instead of saying to students, "on our next assignment, you can either work alone or with a partner. Go

ahead and begin" (Jensen, 2013, p. 74), a teacher can phrase the same scenario as, "I bet you'd like to decide whether to work alone or with a partner on our next assignment. So I'm letting you have it your way: *you* get to choose!" (Jensen, 2013, p. 74).

Providing choices in the classroom can apply to content, social conditions, or learning process. These may not always be applicable, but when appropriate, students can be asked, "Do you want to learn about this aspect of the topic or that one? Who would rather work with a neighbor on this assignment? You have three choices to gather information for this assignment: research online sources, watch and consult these DVDs, or conduct an in-person interview" (Jensen, 2013, p. 75). These choices are subtle, yet powerful and again, provide a locus of control for students.

Delegating classroom jobs for students also allows control and choice to happen in the classroom. At the secondary level, jobs such as passing out and collecting materials, class librarian, phone operator, receiving mail, taking attendance, controlling the environment by being in charge or lights or windows, running errands, leading the class in short stretch breaks, or signaling the teacher when the class is lagging are all opportunities that allow students to feel some ownership of the class and how it is conducted (Jensen, 2013, p. 76).

Allowing students to contribute to the establishment of rules at the start of the school year encourages the ideas of empowerment, belonging, and control in the classroom. Students are more likely to hold themselves and each other accountable, while believe that consequences or rewards are earned or fair. Students can suggest ideas for rules in the beginning of the year through a suggestion box, then they can sort, vote, and tally results. This may be difficult for some teachers, as relinquishing power and responsibility to students may be difficult. However,

Jensen (2013) asks, “How can [you] expect to keep kids invested in the process if [you] don’t them a piece of the action?” (p. 76).

Peer mentoring can provide students in poverty with a unique experience to build dependable relationships, help themselves and others (whether they are the mentor or the mentee) with academics, and provide them with a sense of control over their lives and success (Jensen, 2013). This can be set up to occur in-class during a delegated conferencing/mentoring time, or can occur after school for a half-hour or hour period (pending the after-school time in the district). Teachers can first set up these opportunities as study buddies; students can submit the names of two students they would like to work with, then form partnerships. Each pair can exchange contact information, share materials, sit together, support each other’s work, or engage in friendly competition for class awards. Eventually, students begin to support each other to complete work as they begin to see that one of the partner’s failure may mean that they both have failed. Students will mostly likely work to find ways to further support for each other with the guidance of the teacher (Jensen, 2013).

Managing risk is key in encouraging students to participate and put more effort into their work. Students in poverty experience shame, embarrassment, and fear of being stereotyped and tend to take less risks in class. “When students trust you, they will take bigger risks” (Jensen, 2013, p. 78). Creating trust in the classroom happens through establishing a feeling of respect. Eliminating the opportunity for judgment or ridicule from classmates (putdowns or jokes about comments or contributions made) will let students know they are in a safe environment in which they can contribute, share, and ask questions. Reminding students of this expectation through affirmations, posters, and ones’ own actions will reinforce to students that the classroom is a safe place to contribute, participate, share, and ask questions (Jensen, 2013). Teachers need to be

able to model to students how to acknowledge and recognize each other so it becomes part of the routine for all students. By making eye contact, smiling, acknowledging the contribution of every student and thanking them for participating can help show the positivity needed for more students to feel their contributions will be valued, ultimately engaging more students to participate (Jensen, 2013).

Creating a growth mindset for students in poverty is also key in improving their motivation in the classroom. A growth mindset refers to the belief that "your basic qualities are things you can cultivate through your efforts… everyone can change and grow through application and experience" (Dweck, 2007, p. 7). Students in poverty tend to feel more of "a sense of hopelessness and low-self efficacy" (Jensen, 2013, p. 82), as they are exposed to adverse conditions and circumstances they believe will not change for them. Students are, then, more likely to perform at the level they believe they already are, as opposed to reaching for where they could be, known as a fixed mindset (Dweck, 2007; Jensen, 2013). A fixed mindset refers to believing that your qualities are "carved in stone" (Dweck, 2007, p. 7), and that one may only have a certain amount of intelligence, a certain personality, etc. Students' mindsets, perceptions of their grades and attitudes about learning are indicators of their achievement. Teachers can help students to view themselves as capable learners who grow, change, and have control over their learning. This can happen by affirming students' ability to learn (reinforce their belief that cognitive capacity is not fixed), affirm students' trust in teachers, affirming students' choices, attitudes, and effort, and affirming students' capacity (that students have unlimited amounts of focus, effort, and willpower to try hard) (Dweck, 2007; Jensen, 2013).

Carol Dweck (2007) suggests letting students be aware of failures, not protect them from it. Telling the truth to students about failures and how to learn from them is crucial for students

to grow academically. She provides an example with a gymnast who does not place at a gymnastics meet. Instead of telling her that she was robbed of a ribbon, or that gymnastics is not that important, she was told that there were other gymnasts who have been practicing and training longer than she had, and she too, could accomplish this with continued effort and hard work. The same idea of acknowledging the effort and hard work for success applies to academics as well.

The type of praise given by teachers is one way of fostering a growth mindset. "Praise should deal, not with the child's personality attributes, but with his efforts and achievements" (Dweck, 2007, p. 172). Praising that judges a student's intelligence or talent can be a detriment to how he or she views his or her abilities. Avoiding phrases like "You're so smart!" and providing praise like "You put so much thought into this essay. It really makes me understand in a new way" (Dweck, 2007, p. 172), focuses on the growth-oriented process and allows students to recognized what they accomplished through practice, study, and persistence. Providing constructive criticism that helps students to fix something, create a better product, or do a better job on a task is also beneficial for fostering a growth mindset (Dweck, 2007).

Along with providing the appropriate type of praise, providing positive feedback for students is essential to their motivation to learn. This is particularly true for children living in poverty, as these children typically receive less positive feedback at home (Risley, Hart, & Bloom, 1995). In fact, they receive 12 times more negative feedback than children in higher-income homes (Jensen, 2013). The most effective type of feedback provides information that directly links to three areas of learning; "the learning goal (which needs to be established and challenging); the amount of progress made toward the goal; and where and how to proceed next" (Jensen, 2013, p. 86). Feedback is not effective in isolation. Creating the respectful, positive

learning environment, giving students that sense of autonomy and control over their learning, and creating the challenging learning goals all need to come together in order for meaningful feedback to be effective (Jensen, 2013).

Teachers can provide positive feedback through what Jensen (2013) calls "emotional punctuation" (p. 86). This term refers to verbal affirmation of little things students have done which they can associate with growth and progress, while allowing them to feel more confident in further risk taking and be receptive to future feedback and learning. Simple phrases like, "Thanks for taking care of that. I appreciate your thoughtfulness," or "Hey class, if you and your partner finished up on time, give them a high five and say, 'We did it!'" (Jensen, 2013, p. 86) can provide students the positive feedback needed for future effort.

Allowing students to help develop rubrics allows students to be a part of the goal setting process while also allowing them to be able to define that goal and recognize evidence in how they are working toward and attaining that goal (Jensen, 2013). This creates an opportunity for students to develop and use analytical skills to assess their own progress, increasing their overall effort. Students feel empowered when they have a feeling of control over their work and how they are attaining goals.

Being clear and constructive with feedback can increase motivation. This is done through keeping "error correction specific and task oriented, and asking probing questions without criticizing" (Jensen, 2013, p. 87). For example, acknowledging the positive details of a writing piece while providing constructive comments for students to add more personal feelings can strengthen feedback. Also, providing specific strategies that could assist students to be successful makes feedback beneficial and meaningful to students. In math, this may look like

"You might try putting the A/B function on the left side of the equation and working the problem that way. Let me know what happens," (Jensen, 2013, p. 87).

Getting what Jensen (2013) calls a "trial-size effort" (p. 73), is similar to the trial-size products companies allow people to have at low risk before committing to buying a larger product. This is essential, as students in poverty tend to be less likely to take risks in the classroom. Using multistep processes to ease them into learning can increase motivation and effort. Jensen (2013) presents five strategies teachers can use in the classroom to get this "trial-sized effort" (p.73). *Easing students in with small physical movements* like stamping feet twice, pounding the table, or getting up to take giant steps prior to finding a partner allows for students to up and move, and also piques their interest. *Encouraging voluntary hand raising* gets students in the habit of wanting to the raise their hand. Jensen (2013) suggests doing this by recognizing positivity such as, "If your neighbor made it to class on time today, raise your hand" (p. 89). Opportunities like this have low risk, feel good, and allow the habit of raising hands to become comfortable. *Asking students to share opinions* in the midst of a lesson-related activity allows for a break in that students can take with partners. Prompting students with a task like "turn to your partner and tell them a food you can't stand," prior to asking them to compare notes allows for students to share out something that they know they can contribute. *Dividing content into micro-chunks* allows tasks and readings to become manageable for students. This chunking of material can happen in the form of delegating parts of a reading or assignment to different students, or modifying a task for students who struggle. This chunking of content and material can be increased as students become more motivated and put forth more effort (Jensen, 2013). E*ngaging and empowering with physical responses* provides new energy and can increase participation through a variety of physical responses rather than hand raising that can serve as

signals. Students may respond or be more excited to give cues through various physical activities. Jensen (2013) provides suggestions for these cues such as standing up when ready for a transition, repeating a phrase the teacher gives to demonstrate understanding and listening, providing a thumbs up, down, or sideways to show readiness or agreement, stomping feet as a signal, pounding the desk a certain number of times or using a certain rhythm, or shrugging shoulders (Jensen, 2013). Teachers should also encourage the use of physical movement for the students to signal teachers when they need things such as a stretch break, or when they are confused or feeling distracted. These methods are particularly beneficial for students of poverty, as this helps them exhibit control in helpful ways (Jensen, 2013).

Allowing students living in poverty to find and build intrinsic motivating factors can be key in promoting growth in their academic achievement. When they become invested in their own learning, success will follow. Using these strategies to learn what motivates students to learn is essential for teachers to aide in this success. Rawlinson (2011) states, "learn what motivates students, and use what you learn to improve academic achievement" (p. 26).

Conclusion

For children in poverty, learning can be a stressful, difficult process when faced with adversities that severely impact their learning whether it be cognitive or social and emotional. Academic achievement becomes less of the priority as survival and basic needs are sought regularly. Teachers can ease the stress of learning by making it accessible to each student through specific strategies and techniques that address their individual needs. It's through these techniques and strategies that schools with large populations of students in poverty can foster and

see academic growth. "If your students are lagging, teach them and help hone these core skills, and they will be must more likely to succeed in school and in life" (Jensen, 2013, p. 70).

Chapter 5: Conclusions and Recommendations

The main purpose of this study was to investigate the effects poverty has on brain development and learning in children, which limits their academic success and achievement. My focus was on existing, current research about poverty and data collected about my school to further develop my own understanding of students living in poverty. This was done in order to adjust and focus my future instruction to meet the specific needs of these students.

Because poverty has a direct link to student learning (Jensen, 2009; Marquis-Hobbs, 2014) and due to the growing number of children living in poverty in my school and county (Murphy, 2014; New York State Education Department, 2014), it was my purpose to also be able to provide recommendations and suggestions, in the form of effective strategies, to inform the instruction of my colleagues. This study focused on the following question:

What are the effects of poverty on children's brains, and what are effective teaching/learning strategies that work with children living in poverty?

Conclusions

Poverty places a tremendous amount of stress on children living in poverty that affects their cognitive functioning, and therefore academic achievement.

Much of the research reviewed for this study discussed the "chronic and acute stress" (Jensen, 2009, p. 22; Marquis-Hobbs, 2014) experienced by children living in poverty. I found that they experience many stressors as a result of exposure to trauma (such as violence or abuse) and anxieties due to uncertainty and unpredictability in living situations, sources of food or clothing, or overall safety. Children living in poverty also face fear of danger, abandonment, and the unreliability of emotional support from adults, some who may be sick, incarcerated, or

scarce. Self-doubt and shame or embarrassment due to their family's challenges also affect the level of stress experienced by children living in poverty (Blair et al., 2011; Jensen, 2009; Marquis-Hobbs, 2014; Mohan & Shields, 2014; Thompson & Haskins, 2014). Learning and focus in school become extremely difficult for these children as they are constantly plagued by these stressors. School also becomes less of a priority as they try to cope with their stress.

As a result of this chronic and acute stress, cortisol levels in the brain increase which directly impacts students' learning and slows down the development of executive functions (like working memory, attention, and behavior regulation), as discussed in chapters two and four (Blair et al., 2011; Jensen, 2009; Piurek, 2008). All of these factors together affect academic achievement and put these children at risk for failure and repeating the cycle of "generational poverty" (Jensen, 2009, p. 6).

One of the largest detriments to language development and acquisition for children is poverty.

Research around language development of children in poverty suggests that academic vocabulary (tier 2 and tier 3 words) poses a significant struggle and is a major contributor to academic failure. Children growing up in poverty tend to lack exposure to the meaningful interactions with adults that contribute to their overall comprehension of language and its development.

Just as children in poverty experience chronic and acute stress, the parents of children in poverty experience this as well, which affects the amount of time between parent and child. Parents or other caregivers tend to engage in less back-and-forth conversations and questioning, and also often speak in shorter, more grammatically simple sentences. The research also showed that parents living in poverty are three times less likely to read to their children regularly,

affecting their overall reading readiness prior to entering school (Burger, 2010; Luther, 2012). Children in poverty, then, are less likely to recognize all the letters of the alphabet or be able to write their own names before kindergarten (Jensen, 2009; Luther, 2012).

As students in poverty approach kindergarten with an already large deficit in language, the gap between these students and their more affluent peers becomes larger with each school year, as the rigor of academic language and vocabulary increases.

Building healthy relationships helps improve classroom behavior and achieve academic success for children in poverty.

Much of the research reviewed for this study discussed the need for relationship building skills for students living in poverty. Because children in poverty tend to have fewer meaningful interactions with adults, they can become insecure and stressed, and develop unstable behavior. These students may also lack the skills necessary for connecting with and working cooperatively with peers and developing characteristics like respect and compassion. The type of relationships and interactions with others, particularly adults, are indicative of future behavior and interactions during their years in school (Jensen, 2009).

As the research suggests, relationships that develop from birth to kindergarten seem to have a tremendous impact on cognitive brain function that affect children's learning in school (Begley, 1996; Blair et al., 2011; Jensen, 2009; Piurek, 2008). Developing a strong relationship with students living in poverty helps to counter act the negative emotional responses they've most likely developed prior to entering school. This can have a tremendous effect on their learning and interactions with others. It is important to build these relationships through empathy, and understanding. Awareness of students' day-to-day life, traumas, and stressors can

help teachers better focus on the social and emotional needs of students, therefore building positive relationships.

Engagement/motivation of students in the classroom and a focus on cognitive capacity (vocabulary and executive functioning skills) can help students living in poverty achieve academic success.

Two key factors that contribute to the success of students in school is engagement and motivation in the classroom, and the development of their cognitive learning. Children growing up in poverty experience deficits in these two areas, as discussed above, which largely affect their academic success.

Having students become more engaged and motivated to learn can help develop their achievement as their overall effort, focus, cognitive skills, and comprehension can increase (Jensen, 2013; Pogrow, 2009). Providing opportunities to become engaged allows for students to become excited about learning, provide thought-provoking conversations, improve the mind-set of students, and modify behaviors (Dweck, 2007; Jensen, 2013; Overturf, 2014; Pogrow, 2009).

Focusing on strategies that increase the cognitive capacity of students can support the development of executive functioning skills and vocabulary acquisition. Incorporation of strategies to increase cognitive functioning, like working memory and focus, can also help students comprehend and retain information longer and devote sustained attention to tasks for longer periods of time. As discussed earlier, students living in poverty are at a severe disadvantage for language acquisition as the intensity of language and academic vocabulary increase each school year. These students are more likely to reach kindergarten having heard

thousands of words less than students from middle- or high-income homes. Creating an environment rich in meaningful vocabulary and immersing students in language can help close this word gap, break the cycle of "word poverty" (Overturf, 2014, p. 22) and promote academic success.

Implications for Student Learning

Students will become more invested in their own learning when engagement and motivation to learn increases.

As students become more engaged, their desire and motivation to learn, overall effort, mind-set, and performance in school can increase. Jensen (2013) states a strong correlation between engagement and academic achievement; for every 2% disengagement rises, pass rates on high-stakes testing drop by 1%. It is the goal of all teachers to have their students take on the responsibility of and engage more positively in their learning, and this happens by building students' intrinsic motivation.

Motivation is an internal process and is the key to improving students' academic and behavioral success (Wery & Thomson, 2013). Intrinsically motivated students are more likely to be excited by a challenge, more likely to retain learned concepts, and feel confident about confronting "unfamiliar learning tasks" (Wery & Thomson, 2013, p. 105). Struggling students may lack this intrinsic motivation, as it is closely tied to personal beliefs and environment; this can be the way they view their life or situation outside of school, their perception of their capabilities, or their self-worth. Students living in poverty may believe they are unable to learn or expect failure and therefore, misbehave, avoid academic situations, or become apathetic (Wery & Thomson, 2013).

Building intrinsic motivation in students is a slow process and only happens once students have experienced a series of successes, eventually internalizing the idea. This may begin with increasing extrinsic motivating factors, like encouragement from another person or thing. Rather than completing a task and being rewarded from within, extrinsically motivated learners complete tasks as a means to an end, or to seek a reward or avoid a punishment (Wery & Thomson, 2013).

Ways teachers can enhance students' motivation can be simply included into routine and interactions with students. Believing students can learn can have a powerful impact on them. Modeling enthusiasm for learning and intrinsic motivation allows students to have a direct experience. Setting high, yet realistic expectations for students allows them to feel competent upon completion of tasks, which increases their intrinsic motivation. Simply acknowledging when a task is difficult while reminding students they are capable can authenticate their effort. Praising students while in the process of reaching a goal helps them learn that the "process of learning and developing skills is more important than who gets the best grades" (Wery & Thomson, 2013, p. 107). This also helps students put an emphasis on individual improvement and growth, rather than the potential outcome or being compared to their peers.

"When [students] are affirmed, challenged, and encouraged, [they] work harder. When the learning gets [them] excited, curious, and intrigued, [they] put in more effort" (Jensen, 2013, p. 13).

Increasing the rigor of vocabulary instruction will increase language acquisition and development, and close the gap between students living in poverty and students from more affluent homes.

The underdevelopment of language and vocabulary knowledge, as discussed earlier, creates a wide gap between students in poverty and students from middle- to high-income homes. The gaps in language and vocabulary are indicators of future performance in school, and are more obvious among students as they are "expected to be able to read independently, use textbooks to learn information and to write using precise and skillful word choice" (Scott, 2015, p. 15). Students without direct vocabulary instruction are more likely to score in the 50th percentile on tests, as opposed to students who do receive direct vocabulary instruction on words related to the content, who are more likely to score in the 83rd percentile (Marzano, 2005).

Increasing the frequency and intensity in which students are exposed to vocabulary also increases their acquisition of the background knowledge necessary to succeed in future content they will encounter in school (Marzano, 2005). The more students understand tier 2 and tier 3 words, the more likely they are to understand information they may read or hear about a topic. A comprehensive vocabulary program that entails of teaching individual words, word learning strategies, exposing students to rich and varied words, and "word consciousness" (Scott, 2015, p. 15) as opposed to teaching definitions is essential for students.

Word consciousness refers to analysis and recognition of "how words, as elements of language, are used in the creation of spoken or written text" (Scott, 2015, p. 15). Developing word consciousness allows students to become aware of words in ways that go beyond particular sets of words, which ultimately build their curiosity and interest in learning and using words, their knowledge of how words work, and attitudes about learning new words (Scott, 2015).

The development of vocabulary and word consciousness can happen through several approaches. Teachers' own regular use of precise and sophisticated language in the classroom can increase students' interest and consciousness of words and how they apply and are used

daily. Students benefit from a "playful, safe environment for exploring vocabulary… that focuses on the meaning and nuances of words [which allows them to] realize that this is both appropriate and expected in the context of schooling" (Scott, 2015, p. 19).

Discussions revolving around vocabulary in a content area are also key in developing students' word consciousness, while helping them learn particular vocabulary words as well as learn about vocabulary in general. The use of semantic word maps or lists can also help students connect words to content, look at word parts (prefixes, suffixes, Greek or Latin roots), or study the nuances of meaning (Scott, 2015).

Students living in poverty benefit from positive relationships as they help build trust and respect toward teachers, increase their motivation to learn, and improve their behavior.

At a time when social concerns begin to outweigh academic ones, middle school can prove to be a challenging point for all students, regardless of whether they live in poverty or not. For students living in poverty, research shows that they begin to rely on peer relationships, as relationships at home may be infrequent. These may not always be positive relationships that foster good decision making (Jensen, 2009). Students in poverty are more likely to demonstrate their lack of positive relationships in the classroom through acting out, anxiety, or attempts to get attention, and often show an attitude that indicates their lack of caring (Jensen, 2009).

Positive interactions with teachers and peers in the classroom can help develop trusting, respectful, compassionate behaviors (behaviors that need direct teaching) that lend to positive social interactions, and good decision making. These positive relationships can help improve behavior in the classroom, motivation to learn, and overall academic success (Jensen, 2013; Marquis-Hobbs, 2014; Pogrow, 2009).

Students are more likely to graduate and less likely to drop out when they feel a positive bond with teachers and peers at school (Jensen, 2009). Teachers play an integral role in providing these relationships, as they may have developed few, insecure relationships at home. Students often seek out relationships with teachers, mentors, counselors, and social workers, and show improvements in reading and vocabulary when they feel connected to one of these adults (Jensen, 2009).

Students who experience positive relationships through "looping" (Jensen, 2009, p. 88), keeping students with the same teachers from one grade level to the next, show improved reading and math performance, stronger bonds and increased involvement with other students, higher attendance rates, and emotional stability (improved conflict resolution) (Jensen, 2009), Because teachers don't need to spend time getting to know the vast majority of students, it is estimated that looping also provides an additional six weeks of instruction as opposed to teachers who spend time getting to know students in the beginning of the year (Jensen, 2009).

Students in poverty also benefit from mentoring. These individuals can model behaviors that may not necessarily be shown at home, like passion for learning. Mentors can also provide a long-term relationship which may foster higher self-esteem better health, less involvement with gangs or violence, and more exposure to positive norms; ultimately leading to better academic outcomes and successes (Jensen, 2009).

Implications for My Teaching

Adjusting my current lessons to provide more engaging opportunities through interest and movement can make learning more relevant and appealing for students living in poverty.

Due to the changing population of my students, my teaching and the way I develop lesson plans, gather materials, and assess students also needs to change. Looking more deeply at how my lesson plans are developed and the materials I incorporate can help me understand how students in poverty can succeed in my classroom. As a reading teacher, I tend to focus on skills in isolation and move from one to the next, however, with standards become more demanding, students may not be given in the opportunity to demonstrate higher-level skills in my classroom. By providing "cognitively demanding tasks" (Pogrow, 2009, p. 409) like creating ideas, synthesizing, and generalizing, students will move from focusing on isolated skills to more advanced cognitive learning skills (Pogrow, 2009).

Incorporating more opportunities for all students to engage in effective conversations can build collaborative and interpersonal skills, develop understanding of vocabulary related to content and conversation, and develop general cognitive skills (Pogrow, 2009; Silver, Dewing, Perini, & Jacobs, 2012). Effective conversation and communication skills are crucial for 21st century learning and require speaking, listening, and thinking (Silver et al., 2012). Meaningful conversations can occur through literature circles, think-pair-shares, small or whole group instruction, and debates.

Incorporating opportunities for students to participate in non-school related questions or discussions will help them become comfortable with participating without the fear of being wrong. Polling students to share likes or dislikes and opportunities to turn and talk to a neighbor about an event or opinion will increase a students' likelihood of contributing to classroom discussions and get the student in the habit of raising their hand (Jensen, 2013). Nonverbal opportunities to share thoughts, like using whiteboards or hand signals, are also good strategies I can easily incorporate into my lessons.

By looking at the district's data on enrollment and students from low-income or poverty homes, I can conclude that almost half of my students experience a tremendous word gap from the rest of the students who do not live in poverty (New York State Education Department, 2014). A systematic and meaningful approach to vocabulary instruction is one of the most important things I can incorporate into my teaching. Incorporating "high utility" (Overturf, 2014, p. 23) tier 2 and tier 3 words on a steady basis, in meaningful ways, and across curriculum can help close this gap, increase student comprehension, build networks of meaning for students, and engage them (Overturf, 2014). "Using nonverbal communication, visual aids, and context to add meaning and incorporate vocabulary building engagement activities whenever appropriate" (Jensen, 2013, p. 12) are also valuable strategies I can implement for effective vocabulary instruction.

Pre-assessing students prior to new learning can help to determine their readiness to learn and background that can be connected to new learning.

One way for me to adjust my lesson plans and make learning relevant, is to make sure I can connect prior learning to what students already know. Prominent theories in teaching's best practices involve Swiss psychologist Jean Piaget's idea of constructivism, in that new knowledge is constructed from old knowledge. He believed that children combine prior knowledge with experience, and learners make sense of their experiences and learning using their prior knowledge (Alber, 2011).

In my classroom, pre-assessment for students in poverty can serve as an important tool in getting a better understanding of where their strengths and struggles are. Particularly in a reading classroom, this understanding happens through running records and benchmark

assessments. This is to further understand students' reading behaviors, but also to see what content or strategies are known. This helps teachers to "build [students'] networks of meaning" (Overturf, 2014, p. 23). As mentioned prior, new learning builds from old knowledge and becomes concrete when it can be tied to previous experiences.

Other ways to access students' prior knowledge or pre-assess their learning can be through asking them to share their own "experiences, hunches, and ideas about the content or concept of study and relating it to their own lives" (Alber, 2011). This should be done at the start of a lesson and throughout a unit. Ways to assess prior learning to connect to new can be done through K-W-L charts, where students track what they already know and what they would like to know before a lesson, and then document new learning once they have completed a lesson or unit. The incorporation of familiar pictures books or short stories to a concept being taught can also help students connect old and new knew learning. The use of brainstorms or word webs prior to new learning allows students to associate concepts or ideas they deem familiar to something they may already know. These can be particularly effective when referred to throughout new learning (Alber, 2011).

Building and improving relationships and social emotional skills with students living in poverty can occur through setting clear expectations, providing positive affirmations, and knowledge of their experiences.

One of the things I feel that I've struggled with at times, is building relationships with the particularly hard-to-reach students; the ones that are disengaged, argumentative, disrespectful, and low-achieving. At times I've found myself in power struggles, arguing back with students, and becoming authoritative, which teachers know are not the best ways to manage conflicts.

This study has shown the importance of empathy and understanding of students in poverty, as they are very intuitive and often feel like teachers don't like them. It's important for me to let go of my own misconceptions of poverty, as these students are experiencing things that I never had to, and also need me to fit an important role that may not be available to them consistently. I can do this by providing fairness, choice, consistency, and understanding.

Students need to feel part of the classroom community in order to feel engaged and connected to their peers and the teacher. Allowing students to establish classroom rules in the beginning of the year and modeling behavioral expectations through explicit teaching can help hold all students accountable, as well as make them feel part of the decision making, rather than being told what to do. By allowing students to exhibit some type of control in a world that they feel "happens to them" (Jensen, 2013, p. 74), their stress levels can decrease and learning can increase. By supporting students' independence, I can positively support and encourage their academic success.

Affirming students' effort and experiences also allows students to feel like they are being heard and validated. Simply thanking a student for their thoughts after raising their hand or allowing students to make and share connections between their life and content allows them to make the learning meaningful and relevant (Jones, 2004).

Recommendations for Future Research

As the number of children living in poverty stays at a consistently high percentage (about 22%), it is critical to look at the impact of new education reform on these students' success (Jiang, Ekono, & Skinner, 2015a). The implementation of the Common Core Learning Standards and increasing difficulty and emphasis placed on standardized testing impacts students

living in poverty, as schools and teachers are evaluated on their performance. This could affect the funding and resources, as well as quality of teachers in their schools. Further research could provide insight into how these students are performing on these assessments across the states, the difference between performance by states implementing the Common Core and states who are not. Future research could also investigate testing biases, as students living in poverty tend to lack the experiences and background needed to comprehend text on these assessments.
-testing the effectiveness of these strategies presented in this study

Final Thoughts

Investigating the topic of poverty has been an eye-opening experience. As I've worked in this Title I middle school for six years, I've had a multitude of students from many walks of life come through the doors of my classrooms. The struggling, disengaged, and/or misbehaving students are always the ones that make the year a little more stressful, as I've wondered why they don't buy in or respond to how and what I'm teaching. This study has brought on several "a-ha!" moments, much like the interaction with one of my students I described in the beginning of chapter one. The many experiences of students in poverty (like the 48% of students in my school and the 22% of children in the United States) make learning difficult, uninteresting, and unimportant.

My sentiments are shared with my colleagues, as we continue to see a change in the student population; our frustration for trying to reach all students while pushing them to grow academically has left us defeated. This study proved to me that poverty does in fact, have a negative impact on the developing brains of children which severely impacts their ability and desire to learn. Continuing to try to reach learners in the same ways as in the past does not work

on a population of students that require specific strategies to target their special needs; the brains of students in poverty are shaped by their experiences. "If all teachers needed to do to succeed with students who live in poverty was to use the same strategies they already use with middle- and upper-income students, there would be far less of an achievement gap" (Jensen, 2013, p. 4). These students need things they are typically not given at home; time, encouragement, consistency, differentiation, and relentless efforts to meet their needs. It requires a whole school's effort, but it can start with one teacher in a classroom.

References

11 facts about literacy in America. (n.d.). Retrieved February 24, 2015, from https://www.dosomething.org/facts/11-facts-about-literacy-america

Aber, J. L., Bennett, N. G., Conley, D. C., & Li, J. (1997). The effects of poverty on child health and development. *Annual Review of Public Health*, *18*(1), 463.

Abramsky, S. (2014). The battle hymn of the war on poverty. *Nation*, *298*(5), 12–17.

Adult literacy facts. (2014). Proliteracy.org. Retrieved from http://proliteracy.org/the-crisis/adult-literacy-facts

Alber, R. (2011, July 19). Are you tapping into prior knowledge often enough in your classroom? Retrieved May 8, 2015, from http://www.edutopia.org/blog/prior-knowledge-tapping-into-often-classroom-rebecca-alber

Alloway, T. P., & Alloway, R. G. (2010). Investigating the predictive roles of working memory and IQ in academic attainment. *Journal of Experimental Child Psychology*, *106*(1), 20–29. http://doi.org/10.1016/j.jecp.2009.11.003

Anakwenze, U., & Zuberi, D. (2013). Mental health and poverty in the inner city. *Health & Social Work*, *38*(3), 147–157. http://doi.org/10.1093/hsw/hlt013

Bailey, M. J., & Tanner, M. (2014). Does the U.S. need a new war on poverty? *New York Times Upfront*, *147*(5), 22–22.

Bamburg, J. D. (1994). Raising expectations to improve student learning. Urban monograph series. Retrieved from http://eric.ed.gov/?id=ED378290

Begley, S. (1996). Your child's brain. *Newsweek*, *127*(8), 54–57.

Biddle, B. (2014). *Social class, poverty and education*. Routledge.

Blair, C., Granger, D. A., Willoughby, M., Mills-Koonce, R., Cox, M., Greenberg, M. T., … Fortunato, C. K. (2011). Salivary cortisol mediates effects of poverty and parenting on executive functions in early childhood. *Child Development*, *82*(6), 1970–1984. http://doi.org/10.1111/j.1467-8624.2011.01643.x

Books, S. (2004). *Poverty and schooling in the U.S.: Contexts and consequences*. Mahwah, N.J: L. Erlbaum Associates.

Burger, K. (2010). How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early Childhood Research Quarterly*, *25*(2), 140–165.

Bush, G., W. (2009, January 8). President Bush discusses no child left behind. Retrieved March 21, 2015, from http://georgewbush-whitehouse.archives.gov/news/releases/2009/01/20090108-2.html

Childhood stress. (n.d.). Retrieved March 23, 2015, from http://kidshealth.org/parent/emotions/feelings/stress.html

DeNavas-Walt, C., & Proctor, B. D. (2014, September). Income and poverty in the United States: 2013. U.S. Cencus Bureau. Retrieved from http://www.census.gov/library/publications/2014/demo/p60-249.html

District Website. (2014, July 8). Code of conduct and character. Retrieved from http://www.gateschili.org/files/23347/gccsd_ccc_06302014_final.pdf

Dweck, C. (2007). *Mindset: The new psychology of success* (Reprint edition). New York: Ballantine Books.

Economic Opportunity Act, 42 U.S.C. 1–27 (1964). Retrieved from http://www.gpo.gov/fdsys/pkg/STATUTE-78/pdf/STATUTE-78-Pg508.pdf

Elementary and secondary education act. (n.d.). Retrieved March 23, 2015, from http://www.ed.gov/esea

Esteban-Guitart, M., & Moll, L. C. (2014). Lived experience, funds of identity and education. *Culture & Psychology*, *20*(1), 70–81. http://doi.org/10.1177/1354067X13515940

Fisher, D., Frey, N., & Lapp, D. (2011). Coaching middle-level teachers to think aloud improves comprehension instruction and student reading achievement. *Teacher Educator*, *46*(3), 231–243. http://doi.org/10.1080/08878730.2011.580043

Free-reduced lunch fact sheet. (2014, September 11). Gates Chili Central School District.

Graves, M. F., & Philippot, R. A. (2002). High-interest, easy reading: An important resource for struggling readers. *Preventing School Failure*, *46*(4), 179–182. http://doi.org/10.1080/10459880209604419

Hinitz, B. S. F. (2014). Head start. *YC: Young Children*, *69*(2), 94–97.

Howard, T. (2009). *Poverty is not a learning disability: Equalizing opportunities for low SES students*. Thousand Oaks, Calif: Corwin.

Jensen, E. (2009). *Teaching with poverty in mind: What being poor does to kids' brains and what schools can do about it*. Alexandria, Va: ASCD.

Jensen, E. (2013). *Engaging students with poverty in mind: Practical strategies for raising achievement*. Alexandria, Virginia: ASCD.

Jiang, Y., Ekono, M., & Skinner, C. (2015a, January). Basic facts about low-income children; Children 12 through 17 years, 2013. National Center for Children in Poverty. Retrieved from http://www.nccp.org/publications/pdf/text_1099.pdf

Jiang, Y., Ekono, M., & Skinner, C. (2015b, January). Basic facts about low-income children; Children under 18 years, 2013. National Center for Children in Poverty. Retrieved from http://www.nccp.org/publications/pdf/text_1100.pdf

Jones, S. (2004). Living poverty and literacy learning: Sanctioning topics of students' lives. *Language Arts*, *81*(6), 461–469.

Luther, V. (2012). The riches of literacy: Teaching reading skills to young children living in poverty. *California Reader*, *46*(2), 35–41.

Marquis-Hobbs, T. (2014). Enriching the lives of students in poverty. *Education Digest*, *80*(4), 34–39.

Marzano, R. J. (2005). *Building academic vocabulary: Teacher's manual*. Alexandria, Va: Association for Supervision and Curriculum Development.

Mason, L. H. ., lhm12@psu.edu, Benedek-Wood, E., eab172@psu.edu, & Valasa, L., LLValasa5000@gmail.com. (2009). Teaching low-achieving students to self-regulate persuasive quick write responses. *Journal of Adolescent & Adult Literacy*, *53*(4), 303–312.

Mohan, E., & Shields, C. M. (2014). The voices behind the numbers: Understanding the experiences of homeless students. *Critical Questions in Education*, *5*(3), 189–202.

Murphy, J. (2014, April 6). Social workers a staple of local education. Retrieved March 6, 2015, from http://www.democratandchronicle.com/story/news/2014/04/05/social-workers-staple-local-education/7337183/

National Institute of Mental Health. (n.d.). Fact sheet on stress. Retrieved from http://www.nimh.nih.gov/health/publications/stress/index.shtml

New York State Education Department. (2014). Student enrollment data grades 3-8. New York State Education Department. Retrieved from http://data.nysed.gov/enrollment.php?year=2014&instid=800000034043

Noble, K. G., Norman, M. F., & Farah, M. J. (2005). Neurocognitive correlates of socioeconomic status in kindergarten children. *Developmental Science*, *8*(1), 74–87. http://doi.org/10.1111/j.1467-7687.2005.00394.x

No child left behind act, 20 U.S.C. 1425–2094 (2002). Retrieved from http://www2.ed.gov/policy/elsec/leg/esea02/107-110.pdf

Overturf, B. J. (2014). Interrupting the cycle of word poverty. *Reading Today*, *32*(3), 22–23.

Partners Healthcare. (2010). Roaches and asthma: Lessons to be learned. Retrieved from http://www.asthma.partners.org/NewFiles/BoFAChapter13.html

Piurek, R. (2008). Stressing out, outing stress. *Mind/ Brain*, *30*(2). Retrieved from http://www.indiana.edu/~rcapub/v30n2/stress.shtml

Pogrow, S. (2009). Accelerate the learning of 4th and 5th graders born into poverty. *Education Digest*, *74*(9), 28–33.

Putman, M., & Walker, C. (2010). Motivating children to read and write: Using informal learning environments as contexts for literacy instruction. *Journal of Research in Childhood Education*, *24*(2), 140–151. http://doi.org/10.1080/02568541003635243

Rawlinson, R. (2011). *A mind shaped by poverty; 10 things educators should know*. Bloomington, IN: iUniverse.

Risley, T. R., Hart, B., & Bloom, L. (1995). *Meaningful differences in the everyday experience of young american children*. Baltimore: Paul H. Brookes Publishing Co.

School nutrition & meals. (n.d.). Retrieved April 2, 2015, from http://gateschili.org/info.cfm?subpage=3499

Scott, J. A. (2015). Essential, enjoyable and effective: The what, why and how of powerful vocabulary instruction. *Literacy Learning: The Middle Years*, *23*(1), 14–22.

Silver, H. F., Dewing, R. T., Perini, M. J., & Jacobs, H. H. (2012). *The core six: Essential strategies for achieving excellence with the common core*. Alexandria, VA: ASCD.

Sparks, S. D. (2014). 50 years later, verdicts are mixed on the nation's war on poverty. *Education Week*, *33*(18), 1–15.

St Clair-Thompson, H., Stevens, R., Hunt, A., & Bolder, E. (2010). Improving children's working memory and classroom performance. *Educational Psychology*, *30*(2), 203–219. http://doi.org/10.1080/01443410903509259

Thompson, R. A., & Haskins, R. (2014). Early stress gets under the skin: Promising initiatives to help children facing chronic adversity. *Future of Children*, *24*(1), 1–6.

US Census Bureau, D. I. S. (n.d.). US census bureau poverty main page. Retrieved March 6, 2015, from http://www.census.gov/hhes/www/poverty/about/overview/measure.html

US Department of Education. (2005a, December 19). New no child left behind flexibility: Highly qualified teachers [Pamphlets]. Retrieved March 23, 2015, from http://www2.ed.gov/nclb/methods/teachers/hqtflexibility.html

US Department of Education. (2005b, December 19). Title i; Improving the academic achievement of the disadvantaged [Laws]. Retrieved March 6, 2015, from http://www2.ed.gov/policy/elsec/leg/esea02/pg1.html

US Department of Education. (2014, June 4). Title i, part a program [Program Home Page]. Retrieved March 18, 2015, from http://www2.ed.gov/programs/titleiparta/index.html

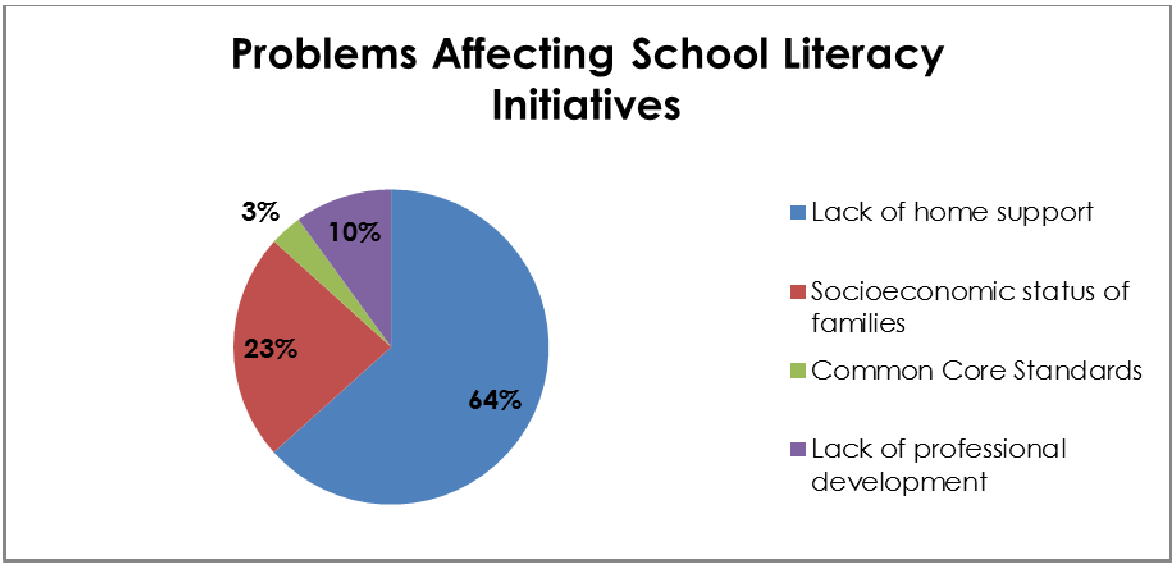
Wery, J., & Thomson, M. M. (2013). Motivational strategies to enhance effective learning in teaching struggling students. *Support for Learning*, *28*(3), 103–108. http://doi.org/10.1111/1467-9604.12027

West, D. J., Wong, E. H., Minero, L. P., & Pumaccahua, T. T. (2014). Utilizing computerized cognitive training to improve working memory and encoding: Piloting a school-based intervention. *Education*, *135*(2), 264–270.

Wexler, A. (2014). Reaching higher? The impact of the common core state standards on the visual arts, poverty, and disabilities. *Arts Education Policy Review*, *115*(2), 52–61. http://doi.org/10.1080/10632913.2014.883897

Wise, R. (1965). *The sound of music*. Musical, 20th Century Fox.

Figure 1.2



(SurveyMonkey Audience, August, 2013)